

Comparison of injury severity between moped and motorcycle crashes: A Finnish two-year prospective hospital-based study

Background and Aims: The coverage of the official statistics is poor in motorcycle and moped accidents. The aim of this study was to analyze the severity of motorcycle and moped crashes, and to define the degree of under-reporting in official statistics. **Material and Methods:** All first attendances due to an acute motorcyclist or moped driver injury registered in the emergency department between June 2004 and May 2006 were analyzed. The severity of the injuries was classified using the Abbreviated Injury Scale score and the New Injury Severity Score. The hospital injury data were compared to the traffic accident statistics reported by the police and compiled and maintained by Statistics Finland. **Results:** A total of 49 motorcyclists and 61 moped drivers were involved in crashes, leading to a total of 94 and 109 injuries, respectively. There were slightly more vertebral and midfoot fractures among motorcyclists than among moped drivers ($p = 0.038$ and 0.016 , respectively). No significant differences were found between the severity (maximum Abbreviated Injury Scale and median New Injury Severity Scores) of the motorcycle and moped crashes. There was no in-hospital mortality. The degree of agreement (overlap) between the hospital dataset and the official statistics was 32%. The rate of under-reporting was 68%. **Conclusions:** According to the maximum Abbreviated Injury Scale and New Injury Severity Scores, the injury severity was equal for motorcycle and moped crashes. The degree of agreement between the hospital dataset and the official statistics was 32%.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Information Management and Logistics, University of Helsinki, North Kymi Hospital

Contributors: Airaksinen, N., Nurmi-Lüthje, I., Lüthje, P.

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Journal: Scandinavian Journal of Surgery

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Scopus rating (2016): CiteScore 3.5 SJR 0.675 SNIP 1.28

Original language: English

ASJC Scopus subject areas: Surgery

Keywords: Injury, Injury severity, Moped, Mortality, Motorcycle, Under-reporting

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Bibliographical note

INT=tl,"Airaksinen, N."

Source: Scopus

Source ID: 84960346612

Research output: Contribution to journal > Article > Scientific > peer-review

Robocasting of Bioactive $\text{SiO}_2\text{-P}_2\text{O}_5\text{-CaO-MgO-Na}_2\text{O-K}_2\text{O}$ Glass Scaffolds

Bioactive silicate glass scaffolds were fabricated by a robocasting process in which all the movements of the printing head were programmed by compiling a script (text file). A printable ink made of glass powder and Pluronic F-127, acting as a binder, was extruded to obtain macroporous scaffolds with a grid-like three-dimensional structure. The scaffold architecture was investigated by scanning electron microscopy and microtomographic analysis, which allowed quantifying the microstructural parameters (pore size 150-180 μm and strut diameter 300 μm). In vitro tests in simulated body fluid (SBF) confirmed the apatite-forming ability (i.e., bioactivity) of the scaffolds. The compressive strength (around 10 MPa for as-produced scaffolds) progressively decreased during immersion in SBF (3.3 MPa after 4 weeks) but remains acceptable for bone repair applications. Taken together, these results (adequate porosity and mechanical strength as well as bioactivity) support the potential suitability of the prepared scaffolds for bone substitution.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: BioMediTech, Politecnico di Torino, Innovation Center Iceland (ICI)

Contributors: Baino, F., Barberi, J., Fiume, E., Orlygsson, G., Massera, J., Verné, E.

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Peer-reviewed: Yes

Publication information

Journal: Journal of Healthcare Engineering

Volume: 2019

Article number: 5153136

ISSN (Print): 2040-2295

Ratings:

Scopus rating (2019): CiteScore 2.6 SJR 0.42 SNIP 1.052

Original language: English

ASJC Scopus subject areas: Biotechnology, Surgery, Biomedical Engineering, Health Informatics

Electronic versions:

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<http://urn.fi/URN:NBN:fi:ty-201907041939>

Source: Scopus

Source ID: 85065603850

Research output: Contribution to journal > Article > Scientific > peer-review

Treatment of acute achilles tendon rupture in scandinavia does not adhere to evidence-based guidelines: A cross-sectional questionnaire-based study of 138 departments

The best treatment of acute Achilles tendon rupture has been discussed for decades. During the past half decade, evidence has increased in favor of nonoperative treatment and dynamic and weightbearing rehabilitation. We hypothesized that the treatment strategies would show great variation and that adherence to evidence-based recommendations would not be as good as desired. The purpose of the present study was to investigate how acute Achilles tendon rupture is treated in Scandinavia. A questionnaire was distributed to all orthopedic departments treating acute Achilles tendon ruptures in Denmark, Sweden, Norway, and Finland. The questionnaire was returned by 138 of 148 departments (response rate 93%). Two-way tables with Fisher's exact test were used for statistical analysis. In Denmark, Norway, Sweden, and Finland, 19 of 23 (83%), 44 of 48 (92%), 26 of 40 (65%), and 8 of 27 (30%) departments recommended surgical treatment ($p < .001$). Dynamic rehabilitation was used significantly less often in Denmark (5 of 23 [22%]), Norway (17 of 45 [38%]), and Sweden (11 of 40 [28%]) than in Finland (15 of 26 [58%]; $p = .015$). A significant difference was found among the countries in the educational level of the performing surgeons ($p < .001$). Surgical treatment was the treatment of choice in Danish, Norwegian, and Swedish hospitals regardless of the increasing evidence favoring nonoperative treatment. Although increasing evidence has favored dynamic rehabilitation, it has gained limited use across Scandinavia. Weightbearing was used in most hospitals. Surgery was performed by junior surgeons in most hospitals across Scandinavia. Treatment algorithms showed considerable variation and often did not adhere to the clinical evidence.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Copenhagen University Hospital, Varberg Hospital, Kungsbacka Hospital, Karolinska University Hospital, Notodden Hospital, Bispebjerg Hospital

Contributors: Barfod, K. W., Nielsen, F., Helander, K. N., Mattila, V. M., Tingby, O., Boesen, A., Troelsen, A.

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Pages: 629-633

Publication date: Sep 2013

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF FOOT AND ANKLE SURGERY

Volume: 52

Issue number: 5

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Ratings:

Scopus rating (2013): CiteScore 1.8 SJR 0.745 SNIP 1.058

Original language: English

ASJC Scopus subject areas: Orthopedics and Sports Medicine, Surgery

Keywords: Achilles tendon, Rehabilitation, Rupture, Scandinavia, Treatment

DOIs:

10.1053/j.jfas.2013.04.012

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<http://www.scopus.com/inward/record.url?scp=84882665077&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84882665077

Research output: Contribution to journal › Article › Scientific › peer-review

Superficial wounding model for epidermal barrier repair studies: Comparison of erbium:YAG laser and the suction blister method

Background and Objectives Wound-healing studies use mainly mechanical methods for wound induction, which are laborious and difficult to standardize. Objective of this study was to evaluate the Erbium:Yttrium-Aluminium-Garnet (Er:YAG) laser method as a model of epidermis ablation on human skin in vivo and to compare the quality and healing rates of Er:YAG laser and suction blister (SB) wounds. **Materials and Methods** Er:YAG laser and SB wounds were made on the forearms of 10 healthy volunteers. Post-wounding measurements including wound surface area (WSA) from photographs, wound depth from 3D volume analysis, trans-epidermal water loss (TEWL), laser doppler blood flow (LDBF), and optical coherence tomography (OCT) imaging were made daily over 7 days. Biopsies were taken on Days 4 and 7. **Results** 3D analysis showed laser wounds to be shallower and more uniform in depth than SB: $54 \pm 14 \mu\text{m}$ versus $140 \pm 102 \mu\text{m}$, respectively, with histology demonstrating complete epidermal removal using SB. SB wounds were more variable in size with a WSA of $0.47 \pm 0.24 \text{cm}^2$ compared to $1.17 \pm 0.14 \text{cm}^2$ for laser wounds. Healing rates were similar in both groups, as measured by TEWL, LDBF, and WSA. OCT imaging on Days 3-4 revealed new epidermis below the fibrin clot, similar to histology, and a visible stratum corneum on Day 7, but no apparent epidermal hyperplasia in contrast to histology. **Conclusion** Compared to the SB model, Er:YAG laser achieved rapid standardized epidermal ablation, which despite morphological differences, was similar in terms of epidermal regeneration/barrier formation. *Lasers Surg. Med.* 44: 525-532, 2012. © Wiley Periodicals, Inc.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Skin Research Centre, Univ Lille Nord de France

Contributors: Ferraq, Y., Black, D. R., Theunis, J., Mordon, S.

Number of pages: 8

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Publication date: Sep 2012

Peer-reviewed: Yes

Publication information

Journal: *Lasers in Surgery and Medicine*

Volume: 44

Issue number: 7

ISSN (Print): 0196-8092

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Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: epidermis, skin, skin abrasion, wound healing

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10.1002/lsm.22054

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<http://www.scopus.com/inward/record.url?scp=84865373699&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

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Research output: Contribution to journal › Article › Scientific › peer-review

A multicentre, prospective, randomized, controlled study to evaluate the use of a fibrin sealant as an adjunct to sutured dural repair

Background. Obtaining intra-operative watertight closure of the dura is considered important in reducing post-operative cerebrospinal fluid (CSF) leak. The purpose of this study was to evaluate a fibrin sealant as an adjunct to sutured dural repair to obtain intra-operative watertight closure in cranial neurosurgery. **Methods.** This randomized, controlled multicenter study compared a fibrin sealant (EVICEL[®] Fibrin Sealant [Human]) to sutured dural closure (Control). Subjects underwent supratentorial or posterior fossa procedures. Following primary dural repair by sutures, the closure was evaluated for intra-operative CSF leak by moderately increasing the intracranial pressure. If present, subjects were randomized to EVICEL[®] or additional sutures (2:1 ratio), stratified by surgical approach. Following treatment, subjects were successful if no CSF leaks were present during provocative challenge. Safety was assessed to 30 days post-surgery, including incidence of CSF leakage. **Results.** One hundred and thirty-nine subjects were randomized: 89 to EVICEL[®] and 50 to Control. Intra-operative watertight closure was achieved in 92.1% EVICEL[®]-treated subjects versus 38.0% controls; a treatment difference of 54.1% ($p < 0.001$). The treatment differences in the supratentorial and posterior fossa strata were 49.1% and 75.7%, respectively ($p < 0.001$). The incidence of adverse events was similar between

treatment groups. No deaths or unexpected serious adverse drug reactions were reported. CSF leakage within 30 days post-operatively was 2.2% and 2.0% in EVICEL[®] and control groups, respectively. In addition, 2 cases of CSF rhinorrhoea were observed in the EVICEL[®] group. Although not associated with the suture line where EVICEL[®] was applied, when combined with the other CSF leaks, the observed leak rate in the EVICEL[®] group was 4.5%. Conclusions. These results indicate that EVICEL[®] is effective as an adjunct to dural sutures to provide watertight closure of the dura mater in cranial surgery. The study confirmed the safety profile of EVICEL[®].

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), John Radcliffe Hospital, ETHICON, ETHICON Inc, Ninewells Hospital, Johnson and Johnson Medical, CHU de Sart Tilman, University Clinics of Schleswig-Holstein, Tampere University Hospital, Ziekenhuis Oost Limburg

Contributors: Green, A. L., Arnaud, A., Batiller, J., Eljamel, S., Gauld, J., Jones, P., Martin, D., Mehdorn, M., Ohman, J., Weyns, F.

Number of pages: 7

Pages: 11-17

Publication date: 2015

Peer-reviewed: Yes

Publication information

Journal: BRITISH JOURNAL OF NEUROSURGERY

Volume: 29

Issue number: 1

ISSN (Print): 0268-8697

Ratings:

Scopus rating (2015): CiteScore 1.9 SJR 0.529 SNIP 0.737

Original language: English

ASJC Scopus subject areas: Clinical Neurology, Surgery

Keywords: Cerebrospinal fluid leak, Dural repair, Fibrin sealant, Watertight dural closure

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Source: Scopus

Source ID: 84946042175

Research output: Contribution to journal > Article > Scientific > peer-review

Rising incidence of small size papillary thyroid cancers with no change in disease-specific survival in finnish thyroid cancer patients

Background: The aim of this study was to investigate trends in the incidence, diagnostics, treatment and survival of thyroid cancer in Tampere University Hospital (TAUH) region in recent decades. Material and Methods: New thyroid cancer cases from 1981 to 2002 were ascertained from the Finnish Cancer Registry. Follow-up data was collected from medical records of TAUH. Differentiated thyroid cancer (DTC; consisting of papillary thyroid cancer (PTC) and follicular thyroid cancer (FTC)) patients' data was analyzed and divided into two equal time periods (1981-1991 and 1992-2002). Results: The total amount of thyroid cancer cases was 553, of which 427 (77%) were papillary and 72 (13%) follicular. Thyroid cancer was four times more common in females than in males and the median age at the time of diagnosis was 52 years. The incidence of DTC was 4.5/100000 in the earlier group and 6.0/100000 in the later group (IRR 1.33, CI 1.11-1.60). The proportion of papillary thyroid cancer rose from 81% to 89% ($p = 0.02$) in two study periods. Median tumour size became smaller, from 25 mm to 15 mm ($p < 0.001$). Surgery became more radical as total thyroidectomies were performed almost exclusively on the later group ($p < 0.001$). Median cumulative dose of radioiodine (I^{131}) therapy was higher in the later group ($p = 0.04$). There was no difference in number of cancer recurrences ($p = 0.54$). The prognosis of DTC was good; 10-year disease-specific survival was 92% in the earlier group and 94% in the later group ($p = 0.43$). Conclusions: The incidence of thyroid cancer has risen and proportion of papillary cancer has increased, however, median size of tumour has decreased. No difference was seen in either all-cause or disease-specific survival.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Department of Surgery, Tampere University Hospital, Neuroimmunology Unit, University of Tampere, Medical School, Division of Surgery, Gastroenterology and Oncology

Contributors: Hakala, T., Kellokumpu-Lehtinen, P., Kholová, I., Holli, K., Huhtala, H., Sand, J.

Number of pages: 6

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Publication date: 2012

Peer-reviewed: Yes

Publication information

Journal: Scandinavian Journal of Surgery

Volume: 101

Issue number: 4

ISSN (Print): 1457-4969

Ratings:

Scopus rating (2012): CiteScore 2.3 SJR 0.595 SNIP 0.803

Original language: English

ASJC Scopus subject areas: Surgery, Medicine(all)

Keywords: Adenocarcinoma, Carcinoma, Follicular, Glandular and epithelial, Head and neck neoplasms, Humans, Medullary, Neoplasms, Papillary, Prognosis, Radionuclide imaging, Survival analysis, Thyreoglobulin, Thyroidectomy, Thyroid diseases, Thyroid gland, Thyroid neoplasms, Thyroid nodule, Treatment outcome

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<http://www.scopus.com/inward/record.url?scp=84873670351&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84873670351

Research output: Contribution to journal > Article > Scientific > peer-review

Vibration transmittance measures sternotomy stability - a preliminary study in human cadavers

Background: Stability is essential for the normal healing of a sternotomy. Mechanical vibration transmittance may provide a new means of early detection of diastasis in the sternotomy and thus enable the prevention of further complications. We sought to confirm that vibration transmittance detects sternal diastasis in human tissue. Methods: Ten adult human cadavers (8 males and 2 females) were used for sternal assessments with a device constructed in-house to measure the transmittance of a vibration stimulus across the median sternotomy at the second, third, and fourth costal cartilage. Intact bone was compared to two fixed bone junctions, namely a stable wire fixation and an unstable wire fixation with a 10 mm wide diastasis mimicking a widely rupturing sternotomy. A generalized Linear Mixed Model with the lme function was used to determine the ability of the vibration transmittance device to differentiate mechanical settings in the sternotomy. Results: The transmitted vibration power was statistically significantly different between the intact chest and stable sternotomy closure, stable and unstable closure, as well as intact and unstable closure (t-values and p-values respectively: $t = 6.87$, $p < 0.001$; $t = 7.41$, $p < 0.001$; $t = 14.3$, $p < 0.001$). The decrease of vibration transmittance from intact to stable at all tested costal levels was 78%, from stable to unstable 58%, and from intact to unstable 91%. The vibration transmittance power was not statistically significantly different between the three tested costal levels (level 3 vs. level 2; level 4 vs. level 2; level 4 vs. level 3; t-values and p-values respectively $t = -0.36$, $p = 0.723$; $t = 0.35$, $p = 0.728$; $t = 0.71$, $p = 0.484$). Conclusions: Vibration transmittance analysis differentiates the intact sternum, wire fixation with exact apposition, and wire fixation with a gap. The gap detection capability is not dependent on the tested costal level. The method may prove useful in the early detection of sternal instability and warrants further exploration.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: BioMediTech, Tampere Heart Hospital Co., Tampere University of Applied Sciences, Department of Cardiothoracic Surgery, National Public Health Institute, Tampere University Hospital

Contributors: Hautalahti, J., Joutsen, A., Goebeler, S., Luukkaala, T., Khan, J., Hyttinen, J., Laurikka, J.

Publication date: 7 Jan 2019

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF CARDIOTHORACIC SURGERY

Volume: 14

Issue number: 1

Article number: 2

ISSN (Print): 1749-8090

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Scopus rating (2019): CiteScore 2.1 SJR 0.65 SNIP 1.07

Original language: English

ASJC Scopus subject areas: Surgery, Pulmonary and Respiratory Medicine, Cardiology and Cardiovascular Medicine

Keywords: Electronics, Integrity, Postoperative complications, Sternotomy, Sternum, Vibration transmittance, Wound healing

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Bibliographical note

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Source: Scopus

Source ID: 85059574086

Research output: Contribution to journal › Article › Scientific › peer-review

A comparative study of the efficacy of endovenous laser treatment of the incompetent great saphenous under general anesthesia with external air cooling with and without tumescent anesthesia

Background This clinical study reports our experience with endovenous laser treatment (ELT) in which external air cooling is used without classic tumescent anesthesia. **Methods** Two hundred thirty-two patients underwent ELT under general sedation. In group A (n = 192), ELT was performed with air cooling but without the concurrent use of tumescent anesthesia. In group B (n = 40), patients were treated using the traditional tumescent technique. The parameters were similar for both groups: 980-nm diode laser, power of 15 W, and pulse duration of 1 second. The laser fiber and catheter were manually withdrawn in 3-mm increments. Ultrasound was performed to reevaluate vein closure at the end of surgery and 2 and 8 weeks and 1 year after. During follow-up, complications such as burns, dyschromia, pain, and dysesthesia, as well as time used for surgery were recorded. **Results** A 96% closure rate was obtained in groups A and B at 2 and 8 weeks. This rate remained stable 1 year after the ELT procedure. Except for a higher percentage of ecchymoses in group B (55%) than in group A (0%) (p <0.001), no significant differences were observed for complications. With external air cooling, ELT took 17.5 minutes to perform for the whole leg, compared with 38.5 minutes when using tumescent anesthesia (p <0.05). **Conclusion** ELT surgery for the great saphenous vein can be safely performed using the air cooling method and is as efficacious as ELT done with tumescent anesthesia but takes significantly less time to perform.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Fundacion Antoni de Gimbernat, Univ Lille Nord de France, RIVA Clinic

Contributors: Hernández Osma, E., Mordon, S. R., Marqa, M. F., Vokurka, J., Trelles, M. A.

Number of pages: 8

Pages: 255-262

Publication date: Feb 2013

Peer-reviewed: Yes

Publication information

Journal: DERMATOLOGIC SURGERY

Volume: 39

Issue number: 2

ISSN (Print): 1076-0512

Ratings:

Scopus rating (2013): CiteScore 3.4 SJR 1.011 SNIP 1.072

Original language: English

ASJC Scopus subject areas: Dermatology, Surgery

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10.1111/dsu.12063

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Source: Scopus

Source ID: 84873481822

Research output: Contribution to journal › Article › Scientific › peer-review

Feasibility of Prostate PAXgene Fixation for Molecular Research and Diagnostic Surgical Pathology: Comparison of Matched Fresh Frozen, FFPE, and PFPE Tissues

Advances in prostate cancer biology and diagnostics are dependent upon high-fidelity integration of clinical, histomorphologic, and molecular phenotypic findings. In this study, we compared fresh frozen, formalin-fixed paraffin-embedded (FFPE), and PAXgene-fixed paraffin-embedded (PFPE) tissue preparation methods in radical prostatectomy prostate tissue from 36 patients and performed a preliminary test of feasibility of using PFPE tissue in routine prostate surgical pathology diagnostic assessment. In addition to comparing histology, immunohistochemistry, and general measures of DNA and RNA integrity in each fixation method, we performed functional tests of DNA and RNA quality, including targeted Miseq RNA and DNA sequencing, and implemented methods to relate DNA and RNA yield and quality to quantified DNA and RNA picogram nuclear content in each tissue volume studied. Our results suggest that it is feasible to use PFPE tissue for routine robot-assisted laparoscopic prostatectomy surgical pathology diagnostics and immunohistochemistry, with the benefit of significantly improved DNA and RNA quality and RNA picogram yield per nucleus as compared with FFPE tissue. For fresh frozen, FFPE, and PFPE tissues, respectively, the average Genomic

Quality Numbers were 7.9, 3.2, and 6.2, average RNA Quality Numbers were 8.7, 2.6, and 6.3, average DNA picogram yields per nucleus were 0.41, 0.69, and 0.78, and average RNA picogram yields per nucleus were 1.40, 0.94, and 2.24. These findings suggest that where DNA and/or RNA analysis of tissue is required, and when tissue size is small, PFPE may provide important advantages over FFPE. The results also suggest several interesting nuances including potential avenues to improve RNA quality in FFPE tissues and confirm recent suggestions that some DNA sequence artifacts associated with FFPE can be avoided.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Signal Processing, BioMediTech Institute, Tampere University Hospital, Oulu University Hospital, University of Helsinki, Helsinki University Central Hospital

Contributors: Högnäs, G., Kivinummi, K., Kallio, H. M., Hieta, R., Ruusuvoori, P., Koskenhalho, A., Kesseli, J., Tammela, T. L., Riikonen, J., Ilvesaro, J., Kares, S., Hirvikoski, P. P., Laurila, M., Mirtti, T., Nykter, M., Kujala, P. M., Visakorpi, T., Tolonen, T., Bova, G. S.

Number of pages: 13

Pages: 103-115

Publication date: 2018

Peer-reviewed: Yes

Early online date: 2017

Publication information

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Volume: 42

Issue number: 1

ISSN (Print): 0147-5185

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ASJC Scopus subject areas: Anatomy, Surgery, Pathology and Forensic Medicine

Keywords: DNA quality, DNA yield, histology, immunostaining, PAXgene, prostate cancer, RNA quality, RNA yield, tissue fixation, tissue processing

DOIs:

10.1097/PAS.0000000000000961

Bibliographical note

EXT="Kivinummi, Kati"

EXT="Kesseli, Juha"

EXT="Nykter, Matti"

Source: Scopus

Source ID: 85039151675

Research output: Contribution to journal > Article > Scientific > peer-review

Method for Evaluation of Surgical Wound Healing: A Case Study

We arranged a case study in order to examine whether tetrapolar bioimpedance measurement could be applied for evaluating the healing of a surgical wound. We measured the donor site surgical wound of a patient who had undergone a breast reconstruction surgery. The measurements were conducted three times in a nine days period, starting from the first postoperative day. As a reference, the impedance of an unaffected site was also measured. The electrodes were placed at equal distances, four centimetres apart in a parallel formation. The results show that, at low frequencies, the impedance of the wound increases with time. At higher frequencies, the situation is opposite; the impedance of the wound is initially higher than the reference and decreases with time. Both ends seem to approach the reference impedance as the healing proceeds. Our results are in accordance with the normal course of surgical wound healing and more specifically appear to be related to the diminishing swelling around the wound site. We conclude that the obtained results are interesting in a level that calls for further investigation.

General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Physiological Measurement Systems and Methods Group, BioMediTech, Turku Univ Hosp, University of Turku, Åbo Akademi, Tampere University Hospital

Contributors: Kekonen, A., Bergelin, M., Eriksson, J., Kaartinen, I., Viik, J.

Number of pages: 4

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Publisher: Springer

Editors: Eskola, H., Väisänen, O., Viik, J., Hyttinen, J.

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Name: IFBME Proceedings

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ASJC Scopus subject areas: Medicine(all), Health Professions(all), Surgery, Dermatology

Keywords: Bioimpedance, Tetrapolar, Surgical, Wound, Monitoring, Healing, Assessment, Method

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Bibliographical note

jufoid=58152

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

1950-nm diode laser-assisted microanastomoses (LAMA): an innovative surgical tool for hand surgery emergencies

Based on previous observations, the 1950-nm diode laser seems to be an ideal wavelength for laser microvascular anastomoses. The data presented here, part of a larger ongoing study, assess its use in emergency hand surgery. Between 2011 and 2014, 11 patients were operated on for hand trauma with laser-assisted microanastomoses (LAMA) and prospectively analysed. LAMA was performed with a 1950-nm diode laser after placement of equidistant stitches. For vessel size 2 (spot duration 1/0.9 s). Mean operating time for arterial and venous microanastomoses was 7.3 ± 1.4 and 8.7 ± 1.0 min, respectively. Three anastomoses required a secondary laser application. Arterial and venous patency rates were 100 % at the time of surgery. The success rate for the 11 procedures assessed clinically and with the Doppler was 100 %. The technique is compared to the current literature. The 1950-nm LAMA is a reliable tool with excellent results in emergency hand surgery. The system is very compact and transportable for utilization in the emergency operating room.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Univ Lille Nord de France, Hannover Medical School, CNRS, Université de Bordeaux, ICMCB

Contributors: Leclère, F. M., Schoofs, M., Vogt, P., Casoli, V., Mordon, S.

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Publication date: 1 May 2015

Peer-reviewed: Yes

Publication information

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Original language: English

ASJC Scopus subject areas: Surgery, Dermatology, Medicine(all)

Keywords: Free flap, LAMA, Laser, Laser microanastomoses, Microanastomoses, Microsurgery

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Source: Scopus

Source ID: 84940007976

Research output: Contribution to journal > Article > Scientific > peer-review

Laser-assisted lipolysis for arm contouring in Teimourian grades I and II: a prospective study of 45 patients

Upper arm deformities secondary to weight loss or senile elastosis have led to an increased demand for aesthetic contouring procedures. We conducted this study to objectively assess if, in Teimourian low-grade upper arm remodelling, one session of laser-assisted lipolysis (LAL) could result in full patient satisfaction. Between 2011 and 2013, 45 patients were treated for unsightly fat arm Teimourian grade I (15 patients), grade IIa (15 patients) and grade IIb (15 patients) with one session of LAL. The laser used in this study was a 1470-nm diode laser (Alma Lasers, Cesarea, Israel) with the following parameters: continuous mode, 15 W power and transmission through a 600- μ m optical fibre. Previous mathematical modelling suggested that 0.1 kJ was required in order to destroy 1 ml of fat. Treatment parameters and adverse effects were recorded. The arm circumference and skin pinch measurements were assessed pre and postoperatively. Patients were asked to file a satisfaction questionnaire. Pain during the anaesthesia and discomfort after the procedure were minimal. Complications included prolonged oedema in 11 patients. The average arm circumference decreased by 4.9 ± 0.4 cm in the right arm ($p < 0.01$) and 4.7 ± 0.5 cm in the left arm ($p < 0.01$) in grade I patients, 5.5 ± 0.6 cm in the right arm ($p < 0.01$) and 5.2 ± 0.5 cm in the left arm ($p < 0.01$) in grade IIa patients and 5.4 ± 0.5 cm in the right arm ($p < 0.01$) and 5.3 ± 0.5 cm in the left arm ($p < 0.01$) in grade IIB patients. The skin tightening effect was confirmed by the reduction of the skin calliper measurements in all three groups. Overall mean opinion of treatment was high for both patients and investigators. Of the 45 patients, all but one would recommend this treatment. A single session of LAL in upper arm remodelling for Teimourian grades I to IIb is a safe and reproducible technique. The procedure allows reduction in the amount of adipose deposits while providing full skin tightening.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Hannover Medical School, Instituto Médico Vilafortuny, Instituto Médico Láser, French Institute of Health and Medical Research U703, Lille University Hospital, FX Michelet Center

Contributors: Leclère, F. M., Alcolea, J. M., Vogt, P., Moreno-Moraga, J., Mordon, S., Casoli, V., Trelles, M. A.

Number of pages: 7

Pages: 1053-1059

Publication date: 1 Apr 2015

Peer-reviewed: Yes

Publication information

Journal: LASERS IN MEDICAL SCIENCE

Volume: 30

Issue number: 3

ISSN (Print): 0268-8921

Ratings:

Scopus rating (2015): CiteScore 4.2 SJR 1.069 SNIP 1.255

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology, Medicine(all)

Keywords: Arm, Arm remodelling, Brachioplasty, LAL, Laser, Laser lipolysis

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Source: Scopus

Source ID: 84939968608

Research output: Contribution to journal > Article > Scientific > peer-review

Efficacy and safety of laser therapy on axillary hyperhidrosis after one year follow-up: A randomized blinded controlled trial

Introduction: Hyperhidrosis is a debilitating problem that is not only uncomfortable and inconvenient, but also embarrassing in work and social situations. In spite of the availability of several options for the treatment of axillary hyperhidrosis, recently, there has been an increasing interest in the use of laser therapy. This study aims to evaluate the efficacy of a laser diode device emitting at wavelengths of 924 and 975nm and classical curettage either alone, simultaneously or in combination. **Material and methods:** A randomized prospective controlled trial was carried out on 100 patients divided into four groups, each with a different protocol: Laser alone at 975nm (group 1), laser alone at 924/975nm simultaneously (group 2), curettage alone (group 3), and finally laser at 924/975nm followed by curettage (group 4). HDSS, starch test and GAIS were used to assess treatment efficacy. The follow-up extended to one year. Statistical analysis (SPSS) was used to determine the accuracy of the results. **Result:** Two patients of group 1 experienced burns during treatment, which took over a month to heal. This group of patients achieved the worst results: The starch test scale results after treatment were 2.48 ± 0.51 and 2.76 ± 0.44 (at 1 and 12 months). The GAIS results were 1.04 ± 0.35 and 0.92 ± 0.28 (1 and 12 months). In group 2 the starch test scale results after treatment were 1.36 ± 0.49 and 1.48 ± 0.51 (at 1 and 12 months). The GAIS results were 2.36 ± 0.49 and 2.72 ± 0.46 (at 1 and 12 months). In group 3, the starch test scale results after treatment were 1.56 ± 0.51 and 1.76 ± 0.60 (at 1 and 12 months), which corresponds to small to substantially smaller dark areas. The GAIS results were 2.28 ± 0.46 and 2.64 ± 0.49 (at 1 and 12 months). The best results were obtained in group 4: HDSS scores were reduced from 3.88 ± 0.33 before treatment to 1.24 ± 0.44 and 0.48 ± 0.51 at the 1 and 12 months controls. The starch test scale results after treatment were 0.40 ± 0.50 and 0.44 ± 0.51 (at 1

and 12 months). The GAIS results were 3.72 ± 0.54 and 3.76 ± 0.44 (at 1 and 12 months). Conclusion: : In this study, the laser at 924/975nm combined with curettage was determined to be the optimal treatment option of those tested for axillary hyperhidrosis. This treatment was safe, with few side effects and improvement that persisted to one year follow-up.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Hannover Medical School, Instituto Médico Láser, Fundacion Antoni de Gimbernat, CNRS, Université de Bordeaux, ICMCB, Lille University Hospital - CHRU

Contributors: Leclère, F. M., Moreno-Moraga, J., Alcolea, J. M., Vogt, P. M., Royo, J., Cornejo, P., Casoli, V., Mordon, S., Trelles, M. A.

Number of pages: 7

Pages: 173-179

Publication date: 1 Feb 2015

Peer-reviewed: Yes

Publication information

Journal: Lasers in Surgery and Medicine

Volume: 47

Issue number: 2

ISSN (Print): 0196-8092

Ratings:

Scopus rating (2015): CiteScore 4.5 SJR 1.082 SNIP 1.233

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology, Medicine(all)

Keywords: Axillary hyperhidrosis, Curettage, Diode laser

DOIs:

10.1002/lsm.22324

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Source: Scopus

Source ID: 84923701183

Research output: Contribution to journal > Article > Scientific > peer-review

Laser-assisted lipolysis for neck and submental remodeling in Rohrich type IV patients: Fact or fiction?

Background: Since the first studies by Apfelberg in 1994 and the mathematical model of Mordon introduced in 2004, laser-assisted lipolysis (LAL) has been on the rise. In a previous study, we presented our results in patients treated with LAL for Rohrich type I to III aging neck. The average cervicomentale angle decreased from 152.6 ± 5.9 to 123.6 ± 8.8 degrees after LAL. This demonstrated a systematic decrease in fat thickness, and improved skin tightening. **Objective:** This new protocol focuses solely on LAL in the Rohrich type IV aging neck. **Methods:** Between June 2012 and February 2013, a prospective study was performed on 10 patients treated with LAL for Rohrich type IV aging neck. The laser used in this study was a 1470 nm diode laser (Alma Lasers, Caesarea, Israel). Laser energy was transmitted through a 600 μ m optical fiber and delivered in a continuous mode, at 15 W power. Previous mathematical modeling suggested that 0.1 kJ was required in order to destroy 1 ml of fat. Patients were asked to fill out a satisfaction questionnaire. The cervicomentale angle was measured 6 months postoperatively, and compared with the preoperative values. **Results:** No seromas were observed, but prolonged edema was observed in two patients. Pain during anesthesia and discomfort after the procedure were minimal. The average cervicomentale angle decreased from 191.5 ± 5.7 to 164.9 ± 14.2 degrees ($p < 0.01$). This demonstrated a systematic decrease in fat thickness and improved skin tightening. Even though the cervicomentale angle was higher than 140° in each case, the investigators, in agreement with the patients, decided to perform a complementary surgery with platysma muscle advancement and plication six months after LAL, in only two of the ten patients. This complementary surgery led to a mean cervicomentale angle of 140.2 ± 11.4 , and fair satisfaction of both patients and investigators. **Conclusion:** LAL alone appears insufficient for complete remodeling in Rohrich type IV aging neck. While LAL alone is sufficient for Grade I to III, a complementary surgery must be added for Grade IV.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Hannover Medical School, Instituto Médico Láser, Fundacion Antoni de Gimbernat, CNRS, Université de Bordeaux, ICMCB, Lille University Hospital - CHRU

Contributors: Leclère, F. M., Vogt, P. M., Moreno-Moraga, J., Alcolea, J. M., Casoli, V., Mordon, S. R., Trelles, M. A.

Number of pages: 6

Pages: 31-36

Publication date: 1 Feb 2015

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF COSMETIC AND LASER THERAPY

Volume: 17

Issue number: 1

ISSN (Print): 1476-4172

Ratings:

Scopus rating (2015): CiteScore 1.8 SJR 0.75 SNIP 0.753

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: Aging neck, LAL, Laser, Laser lipolysis, Rohrich classification, Submental, Submental remodeling, Tissue remodeling

DOIs:

10.3109/14764172.2014.968581

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Source: Scopus

Source ID: 84922570223

Research output: Contribution to journal > Article > Scientific > peer-review

Laser assisted lipolysis for neck and submental remodeling in Rohrich type I to III aging neck: A prospective study in 30 patients

Background: Since the first studies by Apfelberg in 1994 and the mathematical model by Mordon in 2004, laser lipolysis (LAL) has been on the rise. Laser lipolysis has the advantages of reduced operator fatigue, excellent patient tolerance, quick recovery time, as well as the additional benefit of dermal tightening. This article reports our experience with laser-assisted lipolysis (LAL) in submental and neck remodelling.

Methods: Between June 2010 and January 2013, a prospective study was performed on 30 patients treated for Rohrich type I to III aging neck, with LAL. The laser used in this study was a 980 nm diode laser (Quanta system, spa model D-plus, Solbate Olona (VA), Italy). Laser energy was transmitted through a 600 µm optical fiber and delivered in a continuous mode 15 W power. Previous mathematical modelling suggested that 0.1 kJ was required in order to destroy 1 ml of fat. Patients were asked to fill out a satisfaction questionnaire. The cervicomental angle was measured 6 months post-operatively and compared with the preoperative values.

Results: Other than three patients who developed mild hyperpigmentation that disappeared after 4 months, there were no complications in the series. Pain during the anaesthesia and discomfort after the procedure were minimal. The time taken to return to normal activities was 3.2 ± 1 days. All patients would strongly recommend this treatment. Overall satisfaction was high with both patients and investigators and was validated by decrease in cervicomental angle demonstrating a systematic decrease in fat thickness and improved skin tightening.

Conclusion: LAL is a safe and reproducible technique for remodeling in Rohrich type I to III aging neck. The procedure allows for a reduction in the amount of adipose deposits while providing concurrent skin contraction.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Hannover Medical School, Instituto Médico Láser, Fundacion Antoni de Gimbernat, CNRS, Université de Bordeaux, ICMCB, Univ Lille Nord de France, Department Plastic and Reconstructive Surgery, Gustave Roussy Cancer Campus Grand

Contributors: Leclère, F. M., Moreno-Moraga, J., Alcolea, J. M., Casoli, V., Mordon, S. R., Vogt, P. M., Trelles, M. A.

Number of pages: 6

Pages: 284-289

Publication date: 1 Dec 2014

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF COSMETIC AND LASER THERAPY

Volume: 16

Issue number: 6

ISSN (Print): 1476-4172

Ratings:

Scopus rating (2014): CiteScore 2.2 SJR 0.819 SNIP 0.933

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology, Medicine(all)

Keywords: Aging neck, LAL, Laser, Laser lipolysis, Submental, Submental remodeling, Tissue remodeling

DOIs:

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URLs:

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Source: Scopus

Source ID: 84911396169

Research output: Contribution to journal › Article › Scientific › peer-review

Laser-assisted lipolysis for cankle remodelling: A prospective study in 30 patients

Cankles refer to the area where the calf and ankle meet. Unaesthetic fat cancles, where definition between the calf and ankle is impossible, are a frustrating aesthetic deformity, which are exacerbated by their genetic conditioning and special resistance to diet. This article reports our experience with laser-assisted lipolysis (LAL) in cankle remodelling. A total of 30 patients were treated for unaesthetic fat cancles with LAL. The 924/975-nm diode laser used in this study consisted of two lasers, one emitting at 924 nm, and the other at 975 nm. According to our mathematical models, we assumed that to destroy 1 ml of fat, 0.1 kJ was required in dual emission mode at 924/975 nm. Patients were asked to file a satisfaction questionnaire. Ultrasound was used to measure the fat thickness pre- and postoperatively. Oedema in both lateral sulcus of the Achilles tendon was seen in all patients. It subsided after 4 weeks in nine cases and 6 weeks in 21 cases. Only two patients developed mild hyperpigmentation that disappeared, respectively, after 4 and 10 weeks. Pain during the anaesthesia and discomfort after the procedure were low with this technique. Mean down time was 1.0 day. Of the 30 patients, 29 would recommend this treatment. Overall, high patient and investigator satisfaction was confirmed by the sonography used to measure decrease in fat thickness. LAL in cankle remodelling is a safe and reproducible technique that is particularly appreciated by the patient. The procedure allows homogenous reduction of fatty tissue together with skin tightening.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Institut Gustave Roussy, Instituto Médico Láser, Lille University Hospital - CHRU, Universitat Heidelberg, Fundacion Antoni de Gimbernat

Contributors: Leclère, F. M., Moreno-Moraga, J., Mordon, S., Servell, P., Unglaub, F., Kolb, F., Rimareix, F., Trelles, M. A.

Number of pages: 6

Pages: 131-136

Publication date: Jan 2014

Peer-reviewed: Yes

Publication information

Journal: LASERS IN MEDICAL SCIENCE

Volume: 29

Issue number: 1

ISSN (Print): 0268-8921

Ratings:

Scopus rating (2014): CiteScore 3.7 SJR 0.9 SNIP 1.407

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: Cankles, LAL, Laser, Laser lipolysis

DOIs:

[10.1007/s10103-013-1279-4](https://doi.org/10.1007/s10103-013-1279-4)

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Source: Scopus

Source ID: 84893667199

Research output: Contribution to journal › Article › Scientific › peer-review

Long-term outcomes of laser assisted blepharoplasty for ptosis: About 104 procedures in 52 patients

Background: Eyelid ptosis or blepharoptosis is defined as an abnormal drooping of the upper eyelid when looking straight ahead. Laser-assisted blepharoplasty (LAB), first introduced by Baker in 1984, presents the following advantages: improved intraoperative haemostasis, decreased operating time and improved appearance in the immediate postoperative periods. This article reports our long-term experience with LAB in ptosis correction surgery and underlines the advantages of the technique. Methods: A total of 52 patients were treated for ptosis with LAB between 2000 and 2011. The patients had an average age of 59.5 ± 9.6 years. Etiologies were senile ptosis in 34 cases, traumatic ptosis in 9 cases and congenital ptosis in 9 cases. The ptosis was classified as mild in 24 cases, moderate in 11 cases, and severe in 17 cases. The surgical technique was similar to the one described by Baker. The laser used in our studies was the CO₂ Lumenis Active with the following parameters for skin incision: ultrapulse mode, continuous emission, 3-W power (program 1). The laser was then reprogrammed (program 2) with the following parameters for resection of a skin-orbicular muscle flap: regular mode, continuous emission, 9-W power with the beam slightly defocused. Results: Early complications included oedema in 8 patients. More than 1 mm of lid asymmetry was seen in 8 patients with 6 patients under corrected and two over corrected. Two of them chose secondary surgery. Mean down time was 5.5 ± 1.7 days (2-7 days). The mean late follow-up was performed after 2-10 years (mean 6.6 ± 1.7 years). Late complications included 4 recurrences 5, 6, 6, and 8

years, respectively, after the first procedure. All but one were successfully re-operated with the same technique. Overall patient satisfaction ranked high and all but one would recommend this treatment to others. Conclusion: LAB in ptosis surgery is a safe and reproducible technique particularly appreciated by patients. The procedure allows for improved intraoperative haemostasis, decreased operating time and improved appearance in the immediate postoperative periods.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Institut Gustave Roussy, Fundacion Antoni de Gimbernat, Lille University Hospital - CHRU, Vulpus Klinik

Contributors: Leclère, F. M., Alcolea, J., Mordon, S., Servell, P., Kolb, F., Unglaub, F., Trelles, M. A.

Number of pages: 7

Pages: 193-199

Publication date: Aug 2013

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF COSMETIC AND LASER THERAPY

Volume: 15

Issue number: 4

ISSN (Print): 1476-4172

Ratings:

Scopus rating (2013): CiteScore 2 SJR 0.754 SNIP 0.812

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: LAB, Laser, Laser assisted blepharoplasty, Ptosis

DOIs:

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Source: Scopus

Source ID: 84881074041

Research output: Contribution to journal › Article › Scientific › peer-review

Nonanimal stabilized hyaluronic acid for tissue augmentation of the dorsal hands: A prospective study on 38 patients

Background: Often ignored, hands are one of the most telltale signs of aging. This prospective study was initiated to evaluate the effect of subcutaneous hyaluronic acid (HA) injections in aging hands, with special attention to complications and long-term outcomes. Methods: Between January 2010 and December 2010, a total of 38 patients with skin phototypes II-IV and between 58 and 76 years old were treated with HA injection for aging hands. The quantity of injection never exceeded 1.0-1.5 ml HA per hand. A clinical follow-up was performed at 2 weeks, 4 weeks, 3 months, and 6 months after injection. Complications were reviewed for the whole series. At the first follow-up, 2 weeks after the procedure, ultrasound was carried out to determine if additional filling material was required. At each follow-up, patients were asked to fill out a satisfaction questionnaire. Results: Nine patients developed slight ecchymosis that disappeared after 1 week. No other complications were seen in the series. Pain during the injection and discomfort after the procedure were minimal. At the 2-week follow-up, after ultrasound control, nine patients received a complementary injection. At each follow-up, overall patient satisfaction was high and was validated by clearance of rhytids, veins, bony prominences, and dermal and subcutaneous atrophy. Conclusion: Skin revitalization with injectable HA can improve the clinical appearance of the back of the hands. However, this therapy requires knowledge of the possible complications and their remediation as well as knowledge and respect of injected doses. Moreover, despite excellent results at each follow-up, the results of our series are not as good after 6 months, and a longer follow-up would be needed to determine if this procedure provides long-lasting benefit. Level of Evidence III: This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors www.springer.com/00266.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Univ Lille Nord de France, University of Bern, Instituto Médico Vilafortuny, Vulpuslinik, Department of Hand Surgery

Contributors: Leclère, F. M. P., Vögelin, E., Mordon, S., Alcolea, J., Urdiales, F., Unglaub, F., Trelles, M.

Number of pages: 9

Pages: 1367-1375

Publication date: Dec 2012

Peer-reviewed: Yes

Publication information

Journal: AESTHETIC PLASTIC SURGERY

Volume: 36

Issue number: 6

ISSN (Print): 0364-216X

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Original language: English

ASJC Scopus subject areas: Surgery

Keywords: Aging hand, Fillers, Hand rejuvenation, Hyaluronic acid, Tissue augmentation

DOIs:

10.1007/s00266-012-9974-2

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Source: Scopus

Source ID: 84875033155

Research output: Contribution to journal > Article > Scientific > peer-review

Prospective ex-vivo study on thermal effects in human skin phototypes II, IV and VI: A comparison between the 808, 1064, 1210 and 1320-nm diode laser

Background: Laser Assisted Skin Healing (LASH) was first introduced in 2001 by Capon and Mordon to prevent keloids and hypertrophic scars. LASH requires homogenous heating throughout the full thickness of the skin around the wound. However, LASH therapy with 808-nm diode laser is deemed to be only applicable for phototype IIV due to melanin absorption. This prospective ex-vivo study aims to evaluate the thermal effects of different wavelengths (808, 1064, 1210 and 1320 nm) on human skin phototype II, IV and VI. Material and methods: Laser shots were applied on skin explants phototypes II, IV and VI. The following laser settings were used: 808, 1064, 1210 and 1320-nm diode laser, Spot size 20 × 3.7 mm, Power 3 W, Irradiance 4 W/cm, 50 shots for each phototype and wavelength. The surface temperature at 2 and 4-mm depth respectively was evaluated by an infrared camera and a low inertia micro thermocouple. Results: For the 1064, 1210 and 1320-nm wavelengths, the temperature gradient between the surface and 2-mm depth after an irradiation time of 15 s was less than 4.0°C for each phototype. For the 808 nm, the gradient was 0.8°C and 4.4°C in phototype II and IV respectively, but reached 17.2°C in phototype VI. Strong absorption by melanin of skin phototype VI induced unwanted temperature increases at the dermis-epidermis junction, making this wavelength unsuitable for LASH therapy for this phototype. Among the three other wavelengths, the discussion section indicates strong blood absorption at 1064 nm and presents both 1210 and 1320 nm as excellent compromises for LASH therapy across the whole range of phototypes. Conclusion: Being poorly absorbed by melanin, both 1210 and 1320-nm wavelengths ensure homogeneity of temperature throughout the full skin explant thickness. Their possible utilization for efficient LASH therapy should now be confirmed by prospective in vivo studies.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Univ Lille Nord de France, Aix-Marseille University, Universitat Heidelberg

Contributors: Leclère, F. M. P., Magalon, G., Philandrianos, C., Unglaub, F., Servell, P., Mordon, S.

Number of pages: 7

Pages: 7-13

Publication date: Feb 2012

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF COSMETIC AND LASER THERAPY

Volume: 14

Issue number: 1

ISSN (Print): 1476-4172

Ratings:

Scopus rating (2012): CiteScore 2.2 SJR 0.644 SNIP 0.855

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: Cicatrisation, Diode laser, Keloids, Laser, Lash, Melanin, Phototypes, Skin

DOIs:

10.3109/14764172.2011.634419

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<http://www.scopus.com/inward/record.url?scp=84856596374&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84856596374

Évaluation du flux sanguin par imagerie en résonance magnétique fonctionnelle après anastomoses artérielles assistées par laser diode 1,9 µm

Introduction: The most important factor for successful free-flap transfer and replantations is a well-executed anastomosis. The aim of this study is to assess blood flow after laser assisted arterial microanastomosis (LAMA) using a 1.9µm diode laser. **Materials and methods:** LAMA was performed on a series of 10 carotidis on Wistar rats. Two 10/0 stay sutures and a standard laser tissue welding technique (λ : 1.9µm; power: 120. mW) were used. Similarly, a series of 10 conventional arterial anastomosis were performed (CSMA). For the two groups, contralateral non-operated carotidis were used as control. A positioning sequence, an anatomical sequence, an angiographic sequence and a flow sequence were performed 1 day after operation and then after 1, 4 and 8 weeks. **Results:** The arterial patency rate was 100% at the time of surgery. The mean clamping time was 7.2. min in the LAMA group compared to 10.7. min in the CSMA group. In the angiographic sequence, there were no aneurysms in both groups for all observation periods. At postoperative day 1, the mean loss of blood flow at the level of anastomosis in the LAMA group was 6% compared with 14% in the CSMA group. After 1, 4 and 8 weeks, there was an unhooking of the blood flow in the CSMA group: the loss of blood flow was 23%, 27% and 31% respectively, compared with 10%, 12% and 13% in the LAMA group. Moreover, one case of thrombosis was observed in the CSMA group after 1 week. **Conclusion:** The flow-MRI emphasizes that 1.9µm diode laser assisted microvascular anastomosis appears to be a consistent and reliable technique. These results show that 1.9µm diode laser assisted microvascular anastomosis has potential for further development in the near future.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Univ Lille Nord de France

Contributors: Leclère, F. M. P., Schoofs, M., Auger, F., Buys, B., Mordon, S.

Number of pages: 8

Pages: 540-547

Publication date: Dec 2011

Peer-reviewed: Yes

Publication information

Journal: Annales de Chirurgie Plastique Esthétique

Volume: 56

Issue number: 6

ISSN (Print): 0294-1260

Ratings:

Scopus rating (2011): CiteScore 0.9 SJR 0.299 SNIP 0.719

Original language: French

ASJC Scopus subject areas: Surgery

Keywords: Blood flow, Diode laser, Microsurgery, MRI

DOIs:

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URLs:

<http://www.scopus.com/inward/record.url?scp=82955201733&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 82955201733

Research output: Contribution to journal › Article › Scientific › peer-review

Cartilage reshaping for protruding ears: A prospective long term follow-up of 32 procedures

Background Correction of prominent ears is a common plastic surgical procedure. We introduced a new non-invasive laser-assisted cartilage reshaping (LACR) technique as an alternative to invasive surgical otoplasty. **Methods** Since our first report in 2006, 32 LACR procedures in 17 patients have been performed at the Antoni De Gimbernat Foundation in collaboration with the French National Institute of Health and Medical Research (INSERM) U703. For 15 patients, the procedure was bilateral, for the remaining 2 patients LACR was performed only on one side. The treatment consisted of seven stacked pulses (3 ms, 2 Hz, 84 J/cm² cumulative fluence) applied using a 4-mm spot hand piece. Early and late complications were defined and reviewed for the whole series. Satisfaction was assessed by the patients using a visual analogue scale from 0 (unsatisfied) to 10 (highly satisfied). The superior and middle cephaloauricular distances were prospectively evaluated. **Results** Except for two cases of dermatitis, there were no early complications and no late complications (like keloids) in the series. The mean superior and middle cephaloauricular distances were, respectively, 12.3 ± 1.9 and 13.7 ± 1.6 mm compared to 17.8 ± 3.1 mm (p <0.01) and 23.9 ± 1.9 mm (p <0.01) before operation. Mean patient satisfaction was 8.6/10 with all patients reporting that they would be willing to undergo the procedure again, if required. **Conclusion** LACR appears to be a safe and reproducible method for the treatment of protruding ears. Other applications of this technique, like laser assisted septal cartilage reshaping (LASCRA) for septum deviation, have been recently described.

General information

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Frontier Photonics, Lille University Hospital, Fundacion Antoni de Gimbernat, Univ Paris 06, Centre National de la Recherche Scientifique (CNRS), Pierre & Marie Curie University - Paris 6, Institut de Recherche pour le Developpement (IRD), Inria, Institut National de la Sante et de la Recherche Medicale (Inserm), Univ Sorbonne, CNRS,ICM,UMR S 1127,UMR 7225,U1127, INSERM,Inria Paris Rocquencourt,Inst Cerveau & Mo

Contributors: Leclère, F. M. P., Trelles, M., Mordon, S. R.

Number of pages: 6

Pages: 875-880

Publication date: Nov 2011

Peer-reviewed: Yes

Publication information

Journal: Lasers in Surgery and Medicine

Volume: 43

Issue number: 9

ISSN (Print): 0196-8092

Ratings:

Scopus rating (2011): CiteScore 4.8 SJR 1.358 SNIP 1.583

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: cartilage, LACR, laser, otoplasty, protruding ears

DOIs:

10.1002/lsm.21126

URLs:

<http://www.scopus.com/inward/record.url?scp=80054968150&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 80054968150

Research output: Contribution to journal > Review Article > Scientific > peer-review

Presentation, microsurgical therapy, and clinical outcomes in three cases of expanding melanonychia of the nail unit in children

The management of expanding melanonychia in childhood is controversial. Here, we present three cases and discuss their operating indications and reconstruction. Between January 1, 1995 and December 31, 2007, one boy and two girls, were operated for expanding melanonychia, involving the thumb, index Wnger or the middle Wnger. They were 2, 4, and 7 years at the time of surgery. A complete resection of the nail plate was performed followed by a direct Wnger reconstruction using a free short-pedicle vascularized nail Xap of the toe. Histology showed a junctional nevus in all cases. The follow-ups were after 2, 3, and 5 years and without any complications or recurrence. Regarding reconstruction, the mean Foucher and Leclère score were, respectively, 17 and 16 points. It is concluded that for expanding melanonychia, in case of doubt, an examination of the entire lesion is necessary. Reconstruction of the nail unit after wide excision with nail plate ablation can be performed using microsurgery as discussed below. However, new guidelines on shave biopsy can make this microsurgical procedure obsolete.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Lille University Hospital - CHRU, Laboratory of Anatomopathology, Handcenter of Lille University

Contributors: Leclère, F. M. P., Mordon, S., Leroy, M., Lefebvre, C., Schoofs, M.

Number of pages: 5

Pages: 1453-1457

Publication date: Oct 2011

Peer-reviewed: Yes

Publication information

Journal: Archives of Orthopaedic and Trauma Surgery

Volume: 131

Issue number: 10

ISSN (Print): 0936-8051

Ratings:

Scopus rating (2011): CiteScore 2.6 SJR 0.94 SNIP 1.073

Original language: English

ASJC Scopus subject areas: Surgery, Orthopedics and Sports Medicine

Keywords: Expanding melanonychia, Foucher score, Microsurgery, Nail-reconstruction, Toenail complex

DOIs:

10.1007/s00402-011-1288-3

URLs:

<http://www.scopus.com/inward/record.url?scp=83255187858&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 83255187858

Research output: Contribution to journal › Article › Scientific › peer-review

Revue historique et orientations futures aux microsutures vasculaires conventionnelles

Microvascular surgery has become an important method for reconstructing surgical defects due to trauma, tumors or after burn. The most important factor for successful free flap transfer is a well-executed anastomosis. The time needed to perform the anastomosis and the failure rate are not negligible despite the high level of operator's experience. During the history, many alternatives were tried to help the microsurgeon and to reduce the complications. A Medline literature search was performed to find articles dealing with non-suture methods of microvascular anastomosis. Many historical books were also included. The non-suture techniques can be divided into four groups based on the used mechanism of sutures: double intubation including tubes and stents, intubation-eversion including simple rings, double eversion including staples and double rings, and wall adjustment with adhesives or laser. All these techniques were able to produce a faster and easier microvascular anastomosis. Nevertheless, disadvantages of the suturless techniques include toxicity, high cost, leakage or aneurysm formation. More refinement is needed before their widespread adoption. Thus, laser-assisted microvascular anastomosis using 1,9. μm diode laser appeared to be a safe and reliable help for the microsurgeon and may be further developed in the near future.

General information

Publication status: Published

Organisations: Frontier Photonics, Univ Lille Nord de France

Contributors: Leclère, F. M. P., Schoofs, M., Mordon, S.

Number of pages: 9

Pages: 232-240

Publication date: Jun 2011

Peer-reviewed: Yes

Publication information

Journal: Annales de Chirurgie Plastique Esthétique

Volume: 56

Issue number: 3

ISSN (Print): 0294-1260

Ratings:

Scopus rating (2011): CiteScore 0.9 SJR 0.299 SNIP 0.719

Original language: French

ASJC Scopus subject areas: Surgery

Keywords: Adhesives, Laser, Microsurgery, Ring, Staples, Stent, Suturless anastomose

DOIs:

10.1016/j.anplas.2009.12.009

URLs:

<http://www.scopus.com/inward/record.url?scp=79959324087&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 79959324087

Research output: Contribution to journal › Short survey › Scientific › peer-review

1.9 μm diode laser assisted vascular microanastomoses: Experience in 40 clinical procedures

Background Since the initial work of Jacobson and Suarez in 1960, microsurgery has evolved greatly. In 2009, we reported our clinical experience with 1.9 μm diode laser-assisted vascular microanastomoses (LAMA) for free flap reconstruction. In this report, the ongoing study is now expanded to include 11 additional procedures which were analyzed prospectively with a focus on the duration of the LAMA technique. **Methods** In total, 40 clinical procedures with LAMA have been performed since 2005. Mean follow-up was 3.3 years (range 0.5-5.5 years). Among those, 11 procedures were performed and prospectively analyzed during the period 2008-2009. LAMA was performed with a 1.9 μm diode laser after placement of equidistant stitches. For vessels size 2 (spot duration 1/0.9 seconds). **Results** For the last observed 11 procedures, mean occlusion time of the flap arterial and venous anastomoses was 5.4 ± 0.4 and 6.8 ± 0.7 minutes respectively. One anastomosis required a secondary laser application. Arterial and venous patency rates were 100% at the time of surgery. The success rate for the 11 procedures was 100%. The global success rate of the series (97.5%) is discussed and compared with the literature. **Conclusion** The success rates for reconstructive free flap surgery realized with LAMA appear excellent. Technical innovation will most likely lead to widespread use of the handpiece laser in the operating room.

General information

Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Frontier Photonics, Univ Lille Nord de France, Handcenter of Lille University
Contributors: Leclère, F. M. P., Schoofs, M., Buys, B., Mordon, S. R.
Number of pages: 5
Pages: 293-297
Publication date: Apr 2011
Peer-reviewed: Yes

Publication information

Journal: Lasers in Surgery and Medicine
Volume: 43
Issue number: 4
ISSN (Print): 0196-8092
Ratings:
Scopus rating (2011): CiteScore 4.8 SJR 1.358 SNIP 1.583
Original language: English
ASJC Scopus subject areas: Surgery, Dermatology
Keywords: diode laser, free flaps, LAMA, microanastomoses, microsurgery
DOIs:
10.1002/lsm.21055
URLs:
<http://www.scopus.com/inward/record.url?scp=79954531265&partnerID=8YFLogxK> (Link to publication in Scopus)
Source: Scopus
Source ID: 79954531265
Research output: Contribution to journal > Article > Scientific > peer-review

Trente ans de microanastomoses vasculaires assistées par laser des perspectives cliniques?

Introduction: Since the first studies by Jain and Gorisch (1979), laser-assisted anastomoses have been steadily developed to a stage where clinical use is within reach. The laser-assisted vascular microanastomosis (LAMA) procedure is performed more quickly than conventional anastomosis, the surgically induced vessel damage is limited, and reduced bleeding after unclamping is observed. Material and methods: A Medline literature search, for the January 1979 to February 2010 period, was performed to review articles focusing on the LAMA technique. Results: The search yielded a total of 354 publications, of which 87 were relevant: 82 were animal series and five clinical studies. Microsurgical techniques and principal characteristics of LAMA in patients are the focus of the analysis. This study discusses the technological innovations and new orientations in laser welding. Conclusion: The first two clinical series using the 1.9- μ m diode laser appear promising. Technical innovation will most likely lead to greater ease of use of the laser handpiece in the operating room.

General information

Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Frontier Photonics, Univ Lille Nord de France, Lille University Hospital - CHRU
Contributors: Leclère, F. M., Duquennoy-Martinot, V., Schoofs, M., Buys, B., Mordon, S.
Number of pages: 8
Pages: 1-8
Publication date: Feb 2011
Peer-reviewed: Yes

Publication information

Journal: NEUROCHIRURGIE
Volume: 57
Issue number: 1
ISSN (Print): 0028-3770
Ratings:
Scopus rating (2011): CiteScore 0.9 SJR 0.208 SNIP 0.335
Original language: French
ASJC Scopus subject areas: Surgery, Clinical Neurology
Keywords: Diode laser, Laser, Microsurgery, Sutureless anastomoses
DOIs:
10.1016/j.neuchi.2010.08.002
URLs:
<http://www.scopus.com/inward/record.url?scp=79952360848&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 79952360848

Research output: Contribution to journal › Article › Scientific › peer-review

980-nm laser lipolysis (LAL): About 674 procedures in 359 patients

Background: Since the first studies by Apfelberg in 1994, laser lipolysis (LAL) has been on the rise. Laser lipolysis leads to reduced operator fatigue, excellent patient tolerance, quick recovery time, as well as the additional benefit of dermal tightening. This article reports a 5-year experience of LAL and underlines the potential evolutions of the technique.

Methods: Between January 2006 and December 2010, 674 LAL procedures in 359 patients were performed at the Antoni De Gimbernat Foundation in collaboration with the French National Institute of Health and Medical Research (INSERM) U703. LAL was performed with a 980-nm diode laser after tumescent anaesthesia. The following laser settings were used: 600- μ m optical fiber, continuous mode, power depending on individual body areas (1840 W). The cumulative energy used for each area was recorded. Early and late complications were defined and reviewed for the whole series. Satisfaction was assessed by the patients using a visual analogue scale from 0 (unsatisfied) to 10 (highly satisfied). **Results:** Mean cumulative energy ranged from 12 to 60 kJ. Ecchymoses were observed in all patients but resolved in less than 10 days. A touch up was needed in four patients to remove small cushions of fat missed. Mean patient satisfaction ranged from 6/10 to 9.5/10 depending on the treated area. Moreover, all patients reported they would be willing to undergo the procedure again, if needed. **Conclusion:** 980-nm LAL appears to be a safe, effective and reproducible alternative to conventional lipoplasty. However, refinements in dosimetry should be developed in order to optimise outcomes.

General information

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Frontier Photonics, Lille University Hospital, Instituto Médico Vilafortuny, Instituto Médico Láser, Univ Lille Nord de France, Vulpiusklinik, Department of Plastic and Hand Surgery

Contributors: Lecle, F. M. P., Trelles, M., Moreno-Moraga, J., Servell, P., Unglaub, F., Mordon, S. R.

Number of pages: 7

Pages: 67-73

Publication date: Apr 2012

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF COSMETIC AND LASER THERAPY

Volume: 14

Issue number: 2

ISSN (Print): 1476-4172

Ratings:

Scopus rating (2012): CiteScore 2.2 SJR 0.644 SNIP 0.855

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: Adiposity, LAL, Laser, Laser assisted liposuction, Laser lipolysis, Liposuction

DOIs:

10.3109/14764172.2012.670704

URLs:

<http://www.scopus.com/inward/record.url?scp=84859182726&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84859182726

Research output: Contribution to journal › Review Article › Scientific › peer-review

Fluorescence guided resection and glioblastoma in 2015: A review

High-grade gliomas represent a widely heterogeneous group of tumors, the most frequent of which is glioblastoma multiforme. Its annual incidence has risen over the last decades, particularly amongst elderly people. The actual standards of care allow for a 15-month median survival rate for WHO grade IV gliomas. As recurrence occurs in more than 85% of patients at the surgical margins, the initial resection extent is a cornerstone of disease control. Fluorescence guided resection (FGR) aims at increasing complete resections and, thus, local control. This technique uses 5-aminolevulinic acid (5-ALA), a natural intermediate substance in the heme-porphyrin biosynthesis pathway, and a protoporphyrin IX (PpIX) precursor. PpIX is fluorescent under blue light exposure. Recent studies reported a significant increase in complete resections using FGR, which were associated with prolonged progression free survival, fewer reinterventions, and delayed neurological deterioration. Here, we depict the principles of this surgical technique, its actual outcomes, and future developments.

General information

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Frontier Photonics, Univ Lille Nord de France, Univ Paris 06, Centre National de la Recherche Scientifique (CNRS), Pierre & Marie Curie University - Paris 6, Institut de Recherche pour le Développement (IRD), Inria, Institut National de la Santé et de la Recherche Médicale (Inserm), Univ Sorbonne, CNRS, ICM, UMR S 1127, UMR 7225, U1127, INSERM, Inria Paris Rocquencourt, Inst Cerveau & Mo

Contributors: Leroy, H. A., Vermandel, M., Lejeune, J. P., Mordon, S., Reyns, N.

Number of pages: 11

Pages: 441-451

Publication date: 1 Jul 2015

Peer-reviewed: Yes

Publication information

Journal: Lasers in Surgery and Medicine

Volume: 47

Issue number: 5

ISSN (Print): 0196-8092

Ratings:

Scopus rating (2015): CiteScore 4.5 SJR 1.082 SNIP 1.233

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: 5-ALA, fluorescence guided resection, high grade glioma, neurosurgery, PPIX

DOIs:

10.1002/lsm.22359

URLs:

<http://www.scopus.com/inward/record.url?scp=84932192185&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84932192185

Research output: Contribution to journal > Review Article > Scientific > peer-review

Gap Formation During Cyclic Testing of Flexor Tendon Repair

Purpose: Substantial gap formation of a repaired finger flexor tendon is assumed to be harmful for tendon healing. The purpose of this study was to investigate the relationship between gap formation and the failure of the repair during cyclic loading. **Methods:** Thirty-five porcine flexor tendons were repaired and tested cyclically using variable forces until failure or a maximum of 500 cycles. Depending on the biomechanical behavior during cyclic testing, specimens were divided into 3 groups: Sustained (no failure), Fatigued (failure after 50 cycles), and Disrupted (failure before 50 cycles). The relationships between the gap formations, time-extension curves, and group assignments of the samples were investigated. **Results:** The time-extension curves of the Fatigued specimens showed a sudden onset of repair elongation—a fatigue point—which precluded the subsequent failure of the repair. This point coincides with the start of plastic deformation and, thereafter, cumulative injury of the repair consistently led to failure of the repair during subsequent cycles. None of the sustained repairs showed a fatigue point or substantial gapping during loading. **Conclusions:** We conclude that the emergence of a fatigue point and subsequent gap formation during loading will lead to failure of the repair if loading is continued. **Clinical relevance:** The results of this experimental study imply that an inadequate flexor tendon repair that is susceptible to gap formation is under risk of failure.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Mechanical Engineering and Industrial Systems, Tampere University Hospital, Pohjola Hospital, Central Finland Hospital

Contributors: Linnanmäki, L., Göransson, H., Havulinna, J., Sippola, P., Karjalainen, T., Leppänen, O. V.

Pages: 570.e1-570.e8

Publication date: Jun 2018

Peer-reviewed: Yes

Early online date: 2018

Publication information

Journal: Journal of Hand Surgery

Volume: 43

Issue number: 6

ISSN (Print): 0363-5023

Ratings:

Scopus rating (2018): CiteScore 3 SJR 1.101 SNIP 1.354

Original language: English

ASJC Scopus subject areas: Surgery, Orthopedics and Sports Medicine

Keywords: Biomechanical testing, Finger, Flexor digitorum profundus, Hand surgery

DOIs:

10.1016/j.jhsa.2017.12.005

Source: Scopus

Source ID: 85040765797

Research output: Contribution to journal › Article › Scientific › peer-review

Recent advances in cerebrovascular simulation and neuronavigation for the optimization of intracranial aneurysm clipping

Endovascular treatment of intracranial aneurysms (IAs) has improved to the extent that in some instances such an approach has now become safer than surgery. This has dramatically changed clinical practice by reducing the volume and increasing the complexity of IAs referred for open surgical treatment. We review the simulation techniques and dedicated vascular neuronavigation systems that have been developed to maintain the quality of aneurysm clipping in this context. Simulation of surgical approaches was made possible by the introduction of high-resolution 3D imaging techniques such as three-dimensional CT angiography (3D-CTA) and three-dimensional digital subtraction angiography (3D-DSA), enabling reproduction of the craniotomy and rotation of the vascular tree according to the orientation of the operative microscope. A virtual simulator for compiling such data, the Dextroscope®, is now available for this purpose. Simulation of final clipping has been investigated through virtual or physical models, enabling anticipation of aneurysm deformation during clip application and selection of the appropriate clip(s) in terms of number, size, shape and orientation. To improve surgical dissection guidance, specific cerebrovascular neuronavigation procedures have been developed based on 3D-CTA or 3D-DSA. These help make the operation secure by accurately predicting the location and orientation of an aneurysm within its parenchymal and vascular environment. Future simulators dedicated to cerebrovascular procedures will need to integrate representation of the brain surface and biomechanical modeling of brain and aneurysm wall deformation under retraction or during clipping. They should contribute to training and maintenance of surgical skills, thereby optimizing the quality of surgical treatment in this field.

General information

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Frontier Photonics, Univ Lille Nord de France

Contributors: Marinho, P., Thines, L., Verscheure, L., Mordon, S., Lejeune, J. P., Vermandel, M.

Number of pages: 9

Pages: 47-55

Publication date: Mar 2012

Peer-reviewed: Yes

Publication information

Journal: COMPUTER AIDED SURGERY

Volume: 17

Issue number: 2

ISSN (Print): 1092-9088

Ratings:

Scopus rating (2012): CiteScore 0.8 SJR 0.257 SNIP 0.45

Original language: English

ASJC Scopus subject areas: Radiology Nuclear Medicine and imaging, Surgery, Medicine(all)

Keywords: clipping, image guided surgery, intracranial aneurysm, neuronavigation, Simulation, surgical planning

DOIs:

10.3109/10929088.2011.653403

URLs:

<http://www.scopus.com/inward/record.url?scp=84857290806&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84857290806

Research output: Contribution to journal › Review Article › Scientific › peer-review

Laser fractional photothermolysis of the skin: Numerical simulation of microthermal zones

Background: Laser Fractional Photothermolysis (FP) is one of the innovative techniques for skin remodeling and resurfacing. During treatment, the control of the Microscopic Thermal Zones' (MTZs) dimensions versus pulse energy requires detailed knowledge of the various parameters governing the heat transfer process. In this study, a mathematical model is devised to simulate the effect of pulse energy variations on the dimensions of MTZs. Methods: Two series of simulations for ablative (10.6 μm CO₂) and non-ablative (1.550 μm Er:Glass) lasers systems were performed. In each series, simulations were carried for the following pulses energies: 5, 10, 15, 20, 25, 30, 35, and 40 mJ. Results of simulations are validated by histological analysis images of MTZs sections reported in works by Hantash et al. and Bedi et al. Results: MTZs dimensions were compared between histology and those achieved using our simulation model using fusion data technique for both ablative FP and non-ablative FP treatment methods. Depths and widths from simulations are usually deeper ($21 \pm 2\%$) and wider ($12 \pm 2\%$) when compared with histological analysis data. Conclusion: When accounting for the shrinkage effect of excision of cutaneous tissues, a good correlation can be established between the simulation and the histological analysis results.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Lille University Hospital - CHRU, Univ Paris 06, Centre National de la Recherche Scientifique (CNRS), Pierre & Marie Curie University - Paris 6, Institut de Recherche pour le Développement (IRD), Inria, Institut National de la Santé et de la Recherche Médicale (Inserm), Univ Sorbonne, CNRS, ICM, UMR S 1127, UMR 7225, U1127, INSERM, Inria Paris Rocquencourt, Inst Cerveau & Mo, Lille University Hospital

Contributors: Marqa, M. F., Mordon, S.

Number of pages: 9

Pages: 57-65

Publication date: 2014

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF COSMETIC AND LASER THERAPY

Volume: 16

Issue number: 2

ISSN (Print): 1476-4172

Ratings:

Scopus rating (2014): CiteScore 2.2 SJR 0.819 SNIP 0.933

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: Bioheat transfer, Laser fractional photothermolysis, Modeling, Simulation, Thermal damage

DOIs:

10.3109/14764172.2013.854642

URLs:

<http://www.scopus.com/inward/record.url?scp=84896351723&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84896351723

Research output: Contribution to journal > Article > Scientific > peer-review

Numerical simulation of endovenous laser treatment of the incompetent great saphenous vein with external air cooling

Endovenous laser treatment (ELT) has been proposed as an alternative in the treatment of reflux of the great saphenous vein. Before the procedure, peri-saphenous subcutaneous tumescent saline solution infiltration is usually performed. However, diffusion of this tumescent fluid is rapidly observed and can potentially reduce the efficacy as a heat sink. External skin cooling with cold air was proposed as an alternative solution. The objective of this study is to compare endovenous laser treatment without and with air cooling by realistic numerical simulations. An optical-thermal damage model was formulated and implemented using finite element modeling. The general model simulated light distribution using the diffusion approximation of the transport theory, temperature rise using the bioheat equation, and laser-induced injury using the Arrhenius damage model. Parameters, used in clinical procedures, were considered: power, 15 W; pulse duration, 1 s; fiber pull back, 3-mm increments every second; cold air applied in continuous mode during ELT; and no tumescent anesthesia. Simulations were performed for vein locations at 5, 10, and 15 mm in depth, with and without air cooling. For a vein located at 15 mm in depth, no significant difference was observed with and without cooling. For a vein located at 10 mm in depth, surface temperature increase up to 45 C is observed without cooling. For a vein located at 5 mm, without cooling, temperature increase leads to irreversible damage of dermis and epidermis. Conversely, with air cooling, surface temperature reaches a maximum of 38 C in accordance with recordings performed on patients. ELT of the incompetent great saphenous vein with external air cooling system is a promising therapy technique. Use of cold air on the skin continuously flowing in the area of laser shot decreased significantly the heat extent and the thermal damage in the perivenous tissues and the skin.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Univ Lille Nord de France, Fundacion Antoni de Gimbernat

Contributors: Marqa, M. F., Mordon, S., Hernández-Osma, E., Trelles, M., Betrouni, N.

Number of pages: 12

Pages: 833-844

Publication date: May 2013

Peer-reviewed: Yes

Publication information

Journal: LASERS IN MEDICAL SCIENCE

Volume: 28

Issue number: 3

ISSN (Print): 0268-8921

Ratings:

Scopus rating (2013): CiteScore 3.8 SJR 0.931 SNIP 1.585

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: Air cooling, Endovenous laser, Finite element method, Saphenous vein

DOIs:

10.1007/s10103-012-1141-0

URLs:

<http://www.scopus.com/inward/record.url?scp=84880755204&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84880755204

Research output: Contribution to journal > Article > Scientific > peer-review

Laser interstitial thermotherapy of small breast fibroadenomas: Numerical simulations

Background Laser interstitial thermotherapy (LITT) is potentially a novel method to treat small breast fibroadenoma, without the need for surgical removal. Dosimetry planning and conformation of the treated area of tumor remain major issues, especially for a moving organ such as the breast. Pre-treatment simulation planning of this therapy is an effective method to predict the final thermal damage. In this study, a mathematical model is elaborated to simulate the heat distribution and the thermal damage. **Methods** The mathematical model was based on finite element method (FEM) to solve the light distribution, bioheat, and thermal damage equations. Six simulations were performed with the following powers: 5, 6, 7, 8, 9, and 10 W ($\lambda = 980$ nm), and for an irradiation time of 125 seconds, with a 50°C iso-damage temperature. To validate these simulations, six turkey breast samples were irradiated with parameters used for simulations. Volumes of thermal damage were calculated by using formulas: spherical, Elliptical, and Carlsson volumes and compared to the simulated volumes. **Results** Differences between volumes were from 0.01 to 1 cm³. Interpolations between volumes from ex vivo experiments with corresponding powers were established. The relationship between the volume of the thermal damage and the laser power was described by a polynomial equation ($R^2 = 0.99$). The power estimated by the interpolation to obtain 1 cm³ of thermal damage was 7.4 W (922 J) and the maximum corresponding temperature was 90°C. **Conclusion** In this study, a good correlation was established between simulation and ex vivo experiments of LITT for fibroadenoma breast cancer.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Lille University Hospital - CHRU, Univ Paris 06, Centre National de la Recherche Scientifique (CNRS), Pierre & Marie Curie University - Paris 6, Institut de Recherche pour le Developpement (IRD), Inria, Institut National de la Sante et de la Recherche Medicale (Inserm), Univ Sorbonne, CNRS,ICM,UMR S 1127,UMR 7225,U1127, INSERM,Inria Paris Rocquencourt,Inst Cerveau & Mo, Univ Lille Nord de France

Contributors: Marqa, M. F., Mordon, S., Betrouni, N.

Number of pages: 8

Pages: 832-839

Publication date: Dec 2012

Peer-reviewed: Yes

Publication information

Journal: Lasers in Surgery and Medicine

Volume: 44

Issue number: 10

ISSN (Print): 0196-8092

Ratings:

Scopus rating (2012): CiteScore 5 SJR 1.101 SNIP 1.551

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: bioheat transfer simulation, fibroadenoma, laser interstitial thermotherapy (LITT), thermal damage

DOIs:

10.1002/lsm.22097

URLs:

<http://www.scopus.com/inward/record.url?scp=84871807177&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84871807177

Research output: Contribution to journal > Article > Scientific > peer-review

Sensitivity of MRI for articular cartilage lesions of the patellae

Background and Aims: Reliable diagnosis of articular cartilage lesions of the patellae is often based on arthroscopy. However, unnecessary arthroscopies should be avoided. The aim of this study was to assess the sensitivity and

applicability of MRI to diagnosing articular cartilage lesions of the patellae. **Materials and Methods:** We identified 74 consecutive males (mean age 21 years, range 18-28) from the medical records of our institute with the sole diagnosis of articular cartilage lesions of the patellae based on arthroscopy. Magnetic resonance imaging was performed with 1.0 Tesla scanner a mean of 4 weeks before arthroscopy. Sensitivity of symptoms, and MRI for the diagnosis was calculated. **Results:** Based on arthroscopy, 20 (27%) cases of cartilage lesions of the patellae were grade-I, 32 (43%) were grade-II, and 22 (30%) were grade-III. MRI revealed cartilage lesions of the patellae in 49 knees (66%), indicating that the sensitivity of MRI was 66% (95% CI: 53%-74%). MRI sensitivity increased with the severity of chondral lesions: all grade III to IV lesions were detected (sensitivity 100%, 95% CI: 85%-100%) by MRI. Grade of articular cartilage lesions of the patellae based on arthroscopy was not associated with clinical symptoms ($p = 0.61$). **Conclusions:** The sensitivity of 1.0 Tesla MRI for detecting grade-I lesions was low and could not be used to confirm the diagnosis of articular cartilage lesions of the patellae. For the detection of more severe grade-II to III lesions, the MRI sensitivity was markedly higher. MRI may thus be considered an accurate diagnostic tool for identifying more severe cases of articular cartilage lesions of the patellae.

General information

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MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital, Centre for Military Medicine, Central Military Hospital Helsinki

Contributors: Mattila, V. M., Weckström, M., Leppänen, V., Kiuru, M., Pihlajamäki, H.

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Publication information

Journal: Scandinavian Journal of Surgery

Volume: 101

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Ratings:

Scopus rating (2012): CiteScore 2.3 SJR 0.595 SNIP 0.803

Original language: English

ASJC Scopus subject areas: Surgery

Keywords: Anterior knee pain, Articular cartilage lesions, Diagnostic study, Magnetic resonance imaging, Patellae, Risk factor, Sensitivity

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<http://www.scopus.com/inward/record.url?scp=84864334980&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84864334980

Research output: Contribution to journal › Article › Scientific › peer-review

Significant change in the surgical treatment of distal radius fractures: A nationwide study between 1998 and 2008 in Finland

Background: Studies from the United States report a large increase in the surgical treatment of distal radius fractures with open reduction and internal fixation using locked plates. The aim of the present study was to determine whether the same trend has occurred in a Scandinavian country by assessing the number, incidence, and surgical methods of all surgically treated distal radius fractures in Finland over a recent 11-year period. **Methods:** The study covered the whole adult population (aged >19 years) in Finland during the 11-year period from January 1, 1998, to December 31, 2008. Data on surgically treated distal radius fractures were obtained from the nationwide National Hospital Discharge Registry. **Results:** During the 11-year study period, a total of 14,514 surgical operations (external fixation, percutaneous pinning, or plating) for adult distal radius fractures were performed in Finland. There was a dramatic shift toward internal fixation with plating; the incidence and number of platings more than doubled between 2006 and 2008. The incidence and number of external fixations decreased correspondingly. Percutaneous pinning was used in 13% of the surgical procedures during the study period. **Conclusions:** A striking shift from external fixation to plating in the treatment of distal radius fractures has occurred in Finland over the past few years, despite the fact that the scientific literature does not support plating over external fixation. In addition, the incidence and number of surgeries for distal radius fractures doubled between 1998 and 2008. The reasons for these changes are not known.

General information

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Centre for Military Medicine, Tampere University Hospital, UKK Institute Finland, Central Military Hospital Helsinki

Contributors: Mattila, V. M., Huttunen, T. T., Sillanpää, P., Niemi, S., Pihlajamäki, H., Kannus, P.

Number of pages: 4

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Publication date: Oct 2011
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Publication information

Journal: Journal of Trauma - Injury, Infection and Critical Care
Volume: 71
Issue number: 4
ISSN (Print): 0022-5282
Original language: English
ASJC Scopus subject areas: Surgery, Critical Care and Intensive Care Medicine
Keywords: Bone fracture, Distal radius, Epidemiology, Surgery
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URLs:
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Source: Scopus
Source ID: 80054035111
Research output: Contribution to journal › Review Article › Scientific › peer-review

Orthotic insoles do not prevent physical stress-induced low back pain

Orthotic insoles are suggested to prevent low back pain. This randomized controlled study assessed if customised orthotic insoles prevent low back pain. Healthy military conscripts (n = 228; mean age 19 years, range 18-29) were randomly assigned to use either customised orthotic insoles (treatment group, n = 73) or nothing (control group, n = 147). The main outcome measure was low back pain requiring a physician visit and resulting in minimum 1 day suspension from military duty. Twenty-four (33%) treated subjects and 42 (27%) control subjects were suspended from duty due to low back pain (p = 0.37; risk difference 4.3%; 95% CI: -8.7 to 17.3%). Mean suspension duration was 2 days (range 1-7) in both groups. Four (5%) treated subjects and eight (5%) control subjects were released from duty due to persistent low back pain (p = 0.92; risk difference 0%; 95% CI: -6 to 6%). Use of orthotic insoles is therefore not recommended to prevent physical stress-related low back pain.

General information

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MoE publication type: A1 Journal article-refereed
Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital, Military Hospital of Santahamina Garrison, Department of Orthopedic Surgery and Trauma, Finnish Defence Forces et al., Department of Medical Services, Defence Staff
Contributors: Mattila, V. M., Sillanpää, P., Salo, T., Laine, H. J., Mäenpää, H., Pihlajamäki, H.
Number of pages: 5
Pages: 100-104
Publication date: Jan 2011
Peer-reviewed: Yes

Publication information

Journal: EUROPEAN SPINE JOURNAL
Volume: 20
Issue number: 1
ISSN (Print): 0940-6719
Ratings:
Scopus rating (2011): CiteScore 3.7 SJR 1.469 SNIP 1.511
Original language: English
ASJC Scopus subject areas: Surgery, Orthopedics and Sports Medicine
Keywords: Lower back pain, Prevention, rct
DOIs:
10.1007/s00586-010-1496-5
URLs:
<http://www.scopus.com/inward/record.url?scp=78651478010&partnerID=8YFLogxK> (Link to publication in Scopus)
Source: Scopus
Source ID: 78651478010
Research output: Contribution to journal › Article › Scientific › peer-review

New treatment options for onychomycosis

Onychomycosis is the most common nail disorder. The causative pathogens are not only dermatophytes in the majority of cases (*Trichophyton rubrum* and *T. mentagrophytes*), but also yeasts of the genus *Candida* and molds. A wide variety of topical antifungal agents are proposed for first-line treatment of superficial onychomycosis, when the matrix is not

involved. New treatment options using light were recently introduced, such as thermal lasers, non-thermal lasers, and photodynamic therapy. For thermal lasers, a temperature increase in the nail of around 50°C seems to be a prerequisite for success. For non-thermal lasers, the clinical data are very debatable and their mechanism of action still remains mysterious. For photodynamic therapy, 5-aminolevulinic acid is used. The therapy consists of exciting protoporphyrin IX with red light that penetrates relatively deeply. Further clinical studies of larger series of patients and with longer follow-up are still needed to reach a definitive conclusion on the value of these devices.

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MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Lille University Hospital, Fundacion Antoni de Gimbernat, University of Bern

Contributors: Mordon, S. R., Betrouni, N., Trelles, M. A., Leclère, F. M.

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Publication date: 1 Dec 2014

Peer-reviewed: Yes

Publication information

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Ratings:

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Original language: English

ASJC Scopus subject areas: Surgery, Dermatology, Medicine(all)

Keywords: Antifungal therapy, Lasers, Onychomycosis, Photodynamic therapy

DOIs:

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Source: Scopus

Source ID: 84911440559

Research output: Contribution to journal › Article › Scientific › peer-review

New treatment techniques for axillary hyperhidrosis

Hyperhidrosis is a medical problem defined as perspiration in excess of what is normally needed to cool the body. The excessive production of sweat by the sudoriferous glands is independent of the process of thermoregulation. Techniques have recently appeared that make use of energy sources, in particular microwave devices and light (pulsed flashlamp or laser). The aim is to obtain very long-lasting efficacy without notable side effects. Thermal Nd:YAG lasers used with an interstitial fiber, microwave devices, and photodynamic therapy appear to offer new treatment options for axillary hyperhidrosis. However, insertion of a laser fiber into tissue by means of a cannula may lead to complications if the procedure is not well mastered, as has been shown by numerous studies on laser lipolysis. The only microwave device available on the market is certainly interesting. Photodynamic therapy using eosin gel is an attractive technique. The energy source is a pulsed flashlamp, which many physicians have. Eosin gel is relatively easy to produce and these gels are already marketed in several countries. However, further clinical studies of larger series of patients and with longer follow-up are still needed to reach a definitive conclusion as to the value of this approach.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Lille University Hospital, Fundacion Antoni de Gimbernat, University of Bern

Contributors: Mordon, S. R., Trelles, M. A., Leclere, F. M., Betrouni, N.

Number of pages: 6

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Publication date: 1 Oct 2014

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF COSMETIC AND LASER THERAPY

Volume: 16

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Ratings:

Scopus rating (2014): CiteScore 2.2 SJR 0.819 SNIP 0.933

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology, Medicine(all)

Keywords: Hyperhidrosis, Lasers, Light sources, Photodynamic therapy

DOIs:

10.3109/14764172.2014.948883

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<http://www.scopus.com/inward/record.url?scp=84907062449&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84907062449

Research output: Contribution to journal > Article > Scientific > peer-review

Terapia fotodinámica (PDT) en piel y estética: Procedimiento, materiales y método en base a nuestra experiencia

Photo Dynamic Therapy (PTD) is an increasingly used technique in Dermatology and Dermocosmetics. PDT has a wide range of medical applications for the treatment of extended cutaneous cancer, offering also very good results in the treatment of basal cell carcinoma, Bowen's disease, actinic keratosis, acne, rosacea and in cutaneous rejuvenation. The sensitizers and light sources used for photoactivation are also more and more varied but there is still no consensus regarding methods and energy dosage. This study describes material and methods which are currently available and discusses a few details, that based on our own experience, can improve results. Five illustrative cases of different conditions are presented.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Department de Biofísica Médica, Univ Lille Nord de France, Bioquímica Clínica y Patología Molecular, Instituto Médico Vilafortuny, Hospital Central Funchal

Contributors: Mordon, S., Martínez-Carpio, P. A., Vélez, M., Alves, R., Trelles, M. A.

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Publication date: Jul 2012

Peer-reviewed: Yes

Publication information

Journal: Cirugía Plástica Ibero-Latinoamericana

Volume: 38

Issue number: 3

ISSN (Print): 0376-7892

Ratings:

Scopus rating (2012): CiteScore 0.3 SJR 0.177 SNIP 0.285

Original language: Spanish

ASJC Scopus subject areas: Surgery

Keywords: Acne, Actinic keratosis, Basal cell carcinoma, Bowen's disease, Cutaneous aging, Light sources, Photodynamic therapy, Photosensitizers, Rosacea

DOIs:

10.4321/S0376-78922012000300012

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<http://www.scopus.com/inward/record.url?scp=84870262597&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84870262597

Research output: Contribution to journal > Article > Scientific > peer-review

Ventajas de la cicatrización cutánea asistida por láser (LASH)

Suture is the final stage of surgery and as a consequence, a scar is frequently the only visible effect after an operation. LASH technique (Laser Assisted Scar Healing) produces thermal effects to stimulate mechanisms for tissue repair that will determine the quality of the scar. In the experimental phase, rats were irradiated with 810 nm diode-laser after surgical wounds were sutured, and then, compared to another group of rats with the same type of wounds which were sutured with conventional techniques. The results were that those rats treated with laser had less visible scars. Histology comparatively confirmed a notable acceleration in the scarring process with modification of the TGF β (Transforming Growth Factor-Beta), which is directly involved in tissue repair in those rats treated with laser. The tensiometric analysis also demonstrated a better resistance to mechanical stress of wounds. Clinically, in dermolipectomy patients, breast reductions and facial lifts, in which part of the sutures were treated with LASH, at 8 days, 3 months and 1 year controls, evaluated by independent surgeons to the study and by patients, statistical results were more favourable for patients treated with LASH technique. The effective doses determined for treatment were laser fluencies between 80 and 120 J/cm². LASH is a fast, simple to carry out and reproducible method, with clear evidence that it is possible to considerably reduce scars, giving them a better quality and aesthetic appearance.

General information

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MoE publication type: A1 Journal article-refereed
Organisations: Frontier Photonics, Univ Lille Nord de France, Instituto Médico Vilafortuny
Contributors: Mordon, S., Trelles, M. A.
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Publication date: Oct 2011
Peer-reviewed: Yes

Publication information

Journal: Cirugia Plastica Ibero-Latinoamericana
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Issue number: 4
ISSN (Print): 0376-7892
Ratings:
Scopus rating (2011): CiteScore 0.4 SJR 0.167 SNIP 0.471
Original language: Spanish
ASJC Scopus subject areas: Surgery
Keywords: Assisted wound healing, Laser, LASH, Scar
DOIs:
10.4321/S0376-78922011000400012
URLs:
<http://www.scopus.com/inward/record.url?scp=84859750046&partnerID=8YFLogxK> (Link to publication in Scopus)
Source: Scopus
Source ID: 84859750046
Research output: Contribution to journal > Article > Scientific > peer-review

Laser-assisted lipolysis for knee remodelling: A prospective study in 30 patients

Background: Unightly fat knees are a frustrating aesthetic deformity exacerbated by genetic predisposition and resistance to diet. This article reports our experience with laser-assisted lipolysis (LAL) in knee remodelling. Methods: A total of 30 patients were treated for unsightly fat knees with LAL. The 924/975-nm diode laser used in this study consists of two lasers, one emitting at 924 nm and another at 975 nm. Previous mathematical modelling suggested that 0.1 kJ was required in order to destroy 1 ml of fat, in dual emission mode at 924/975 nm. Patients were asked to fill out a satisfaction questionnaire. Ultrasound was used to measure the fat thickness pre-and post-operatively. Results: Other than one patient who developed mild hyperpigmentation that disappeared after 2 months, there were no complications in the series. Pain during the anaesthesia and discomfort after the procedure were minimal. Return to normal activities never took longer than 2 days and mean downtime was 0.92 days. Of the 30 patients, 29 would recommend this treatment. Overall satisfaction was high with both patients and investigators and was validated by ultrasound measurements demonstrating a systematic decrease in fat thickness. Conclusion: LAL in knee remodelling is a safe and reproducible technique, particularly appreciated by patients. The procedure allows for a reduction in the amount of adipose deposits while providing concurrent skin contraction.

General information

Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Frontier Photonics, Instituto Médico Láser, Fundacion Antoni de Gimbernat, Univ Paris 06, Centre National de la Recherche Scientifique (CNRS), Pierre & Marie Curie University - Paris 6, Institut de Recherche pour le Developpement (IRD), Inria, Institut National de la Sante et de la Recherche Medicale (Inserm), Univ Sorbonne, CNRS,ICM,UMR S 1127,UMR 7225,U1127, INSERM,Inria Paris Rocquencourt,Inst Cerveau & Mo, Universitat Heidelberg
Contributors: Moreno-Moraga, J., Trelles, M. A., Mordon, S., Unglaub, F., Bravo, E., De La Torre, J. R., Sanz, I., Servell, P., Betrouni, N., Leclre, F. M.
Number of pages: 8
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Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF COSMETIC AND LASER THERAPY
Volume: 14
Issue number: 2
ISSN (Print): 1476-4172
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Original language: English
ASJC Scopus subject areas: Surgery, Dermatology
Keywords: Knee, LAL, Laser, Laser lipolysis
DOIs:

10.3109/14764172.2012.670248

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Source ID: 84859177587

Research output: Contribution to journal › Article › Scientific › peer-review

Intraleural photodynamic therapy for mesothelioma: What place and which future?

In the surgical multimodal management of malignant pleural mesothelioma, it seems crucial to proceed with an efficient local adjuvant treatment to kill residual tumor cells. Intraleural photodynamic therapy has recently emerged as a potential candidate in this goal. In this review, we analyzed and classified 16 articles in which patients with malignant pleural mesothelioma received intraleural photodynamic therapy after maximal surgical resection. The toxicity, effect on survival, and development of the technique were assessed. After two decades of clinical studies, intraleural photodynamic therapy after surgical resection became a safe treatment that significantly improved the survival of patients.

General information

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Frontier Photonics, Univ Paris 06, Centre National de la Recherche Scientifique (CNRS), Pierre & Marie Curie University - Paris 6, Institut de Recherche pour le Développement (IRD), Inria, Institut National de la Santé et de la Recherche Médicale (Inserm), Univ Sorbonne, CNRS,ICM,UMR S 1127,UMR 7225,U1127, INSERM,Inria Paris Rocquencourt,Inst Cerveau & Mo, Lille University Hospital - CHRU

Contributors: Munck, C., Mordon, S. R., Scherpereel, A., Porte, H., Dhalluin, X., Betrouni, N.

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Publication date: 1 Jun 2015

Peer-reviewed: Yes

Publication information

Journal: Annals of Thoracic Surgery

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ISSN (Print): 0003-4975

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Original language: English

ASJC Scopus subject areas: Cardiology and Cardiovascular Medicine, Surgery, Pulmonary and Respiratory Medicine, Medicine(all)

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Research output: Contribution to journal › Review Article › Scientific › peer-review

Position paper from the IBRA Symposium on Surgery of the Head - The 2nd International Symposium for Condylar Fracture Osteosynthesis, Marseille, France 2012

Background This is a position paper from the 2nd International Bone Research Association (IBRA) Symposium for Condylar Fracture Osteosynthesis 2012 was held at Marseille, succeeding the first congress in Strasbourg, France, in 2007. The goal of this IBRA symposium and this paper was to evaluate current trends and potential changes of treatment strategies for mandibular condylar fractures, which remain controversial over the past decades. **Methods** Using a cross-sectional study design, we enrolled the consensus based on the panel of experts and participants in the IBRA Symposium 2012. The outcomes of interest were the panel and electronic votes on management of condylar base, neck and head fractures, and panel votes on endoscopic and paediatric condylar fractures. Appropriate descriptive and univariate statistics were used.

Results The consensus derived from 14 experts and 41 participant surgeons, using 12 case scenarios and 27 statements. The experts and participants had similar decision on the treatment of condylar base, neck and head fractures, as well as similar opinion on complications of condylar fracture osteosynthesis. They had a parallel agreement on using open reduction with internal fixation (ORIF) as treatment of choice for condylar base and neck fractures in adults. Endoscopic approaches should be considered for selected cases, such as condylar base fractures with lateral displacement. There

was also a growing tendency to perform ORIF in condylar head fractures. The experts also agreed to treat children (>12 years old) in the same way as adults and to consider open reduction in severely displaced and dislocated fractures even in younger children. Nevertheless, non-surgical treatment should be the first choice for children

Conclusions The experts and participating surgeons had comparable opinion on management of condylar fractures and complications of ORIF. Compared to the first Condylar Fracture Symposium 2007 in Strasbourg, ORIF may now be considered as the gold standard for both condylar base and neck fractures with displacement and dislocation. Although ORIF in condylar head fractures in adults and condylar fractures in children with mixed dentition is highly recommended, but this recommendation requires further investigations.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), University Hospital of Marburg, Aix-Marseille Univ, Amiens-Picardie University Medical Centre, Technical University (TU), Lille University Hospital - CHRU, São Paulo State University, North Hospital, Royal Hospital for Sick Children Glasgow, University Medical Centre of Besançon, University Hospital Basel, Tampere University Hospital, S. Maria Hospital, Geneva University Hospital, University Medical Centre of Strasbourg

Contributors: Neff, A., Chossegros, C., Blanc, J. L., Champsaur, P., Cheynet, F., Devauchelle, B., Eckelt, U., Ferri, J., Gabrielli, M. F. R., Guyot, L., Koppel, D. A., Meyer, C., Müller, B., Peltomäki, T., Spallaccia, F., Varoquaux, A., Wilk, A., Pitak-Arnop, P.

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Publication information

Journal: Journal of Cranio-Maxillofacial Surgery

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Issue number: 7

ISSN (Print): 1010-5182

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Original language: English

ASJC Scopus subject areas: Surgery, Oral Surgery, Otorhinolaryngology

Keywords: Condylar fracture, Consensus, Osteosynthesis, Paediatric fractures, Position paper

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Source: Scopus

Source ID: 84908253298

Research output: Contribution to journal > Article > Scientific > peer-review

Stem cell enrichment does not warrant a higher graft survival in lipofilling of the breast: A prospective comparative study

Background Stem cell enrichment is generally believed to be of crucial importance for success in lipofilling for cosmetic breast augmentation. No comparative clinical studies have been reported to support this. **Methods** A total of 18 women underwent breast augmentation with water-assisted lipotransfer (WAL). In 10 of the cases, transferred lipoaspirate was enriched with stromal stem cells using the Celution® system (Cytori Therapeutics Inc., San Diego, Ca, USA). Magnetic resonance imaging (MRI)-based volumetric analysis was done preoperatively and 6 months after the procedure. To verify scientifically that stem cells were transplanted, samples of the transplanted tissues were processed in the laboratory to isolate the adipose stem cells (ASCs). **Results** MRI volumetry revealed a volume survival of the whole (watery) graft of mean 54% (SD 7) in the WAL only and of 50% (SD 10) in the WAL with stem cell-enrichment patients. As centrifugation of the WAL grafts demonstrated an average adipose tissue of 68%, the average volume survival of adipose tissue itself was 79% (SD 13) in the WAL only and 74% (SD 14) in the WAL with stem cell-enrichment patients. This difference (4.5%) was not statistically significant (independent samples t test, $p = 0.330$, 95% confidence interval of difference, 4.8, 13.9%). **Conclusions** Breast augmentation by lipofilling using WAL alone is faster, cheaper, has a lower risk of contamination and offers at least an equal take rate. We do not see any advantage in stem cell enrichment by the Celution® system in cosmetic fat transplantation to the breast.

General information

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Plastic Surgery Hospital KL, Tampere University Hospital, Vantaan Magneetti Ltd, German Breast Group

Contributors: Peltoniemi, H. H., Salmi, A., Miettinen, S., Mannerström, B., Saariniemi, K., Mikkonen, R., Kuokkanen, H., Herold, C.

Number of pages: 10
Pages: 1494-1503
Publication date: Nov 2013
Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF PLASTIC RECONSTRUCTIVE AND AESTHETIC SURGERY

Volume: 66

Issue number: 11

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Ratings:

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Keywords: BEAULI, Fat transplantation, Lipofilling, Stem cell, Volumetry, WAL

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Source: Scopus

Source ID: 84885418334

Research output: Contribution to journal > Review Article > Scientific > peer-review

Treatment of keloid scars with a 1210-nm diode laser in an animal model

Background and Objective A temperature increase can improve wound healing by activation of heat shock protein 70 and stimulation of fibroblasts. Since keloids are a dysfunction of collagen fiber synthesis and organization, this study aimed to evaluate if a 1,210 nm diode laser could have effects in a new animal model of keloid scars. **Study Design/Materials and Methods** A total of 39 nude mice were used for this study. Phototypes IV and V human keloids were grafted into their backs and after 1 month of healing, the mice were divided into four groups: Control, Laser, Resection, Resection/Laser. In the Laser group, the keloids were treated with a 1,210-nm diode-laser with the following parameters: 4 W; 10 seconds; fluence: 51 J/cm²; spot: 18.9 × 3.7 mm². In the Resection group, surgical intra-lesional excision was performed. In the Resection/Laser group, keloids were treated with the 1,210-nm laser-diode after surgical intra-lesional excision. Temperature measurements were made during the laser treatment. Clinical examination and histological study were performed on the day of treatment and 1 month, 2 months, and 3 months later. **Results** Mean temperature measurement was of 44.8°C (42-48°) in the Laser groups. No healing complications or keloid proliferation was observed in any group. Keloid histologic characters were confirmed in all grafts. No histologic particularity was observed in the laser groups in comparison with the Control and Resection groups. **Conclusion** First, this keloid animal model appears to be adapted for laser study. Secondly, the 1,210-nm diode laser does not induce keloid thermal damage in vivo. Further studies with different 1,210-nm laser diode parameters should be performed in order to observe significant effects on keloids.

General information

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MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Service de Chirurgie Plastique Hôpital Nord, Aix-Marseille University, AP-HM, CHU Brest, INSERM U1189 ONCO-Thai

Contributors: Philandrianos, C., Bertrand, B., Andrac-Meyer, L., Magalon, G., Casanova, D., Kerfant, N., Mordon, S.

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Peer-reviewed: Yes

Publication information

Journal: Lasers in Surgery and Medicine

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ISSN (Print): 0196-8092

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Scopus rating (2015): CiteScore 4.5 SJR 1.082 SNIP 1.233

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology

Keywords: animal model, keloid, laser diode, thermal laser, wound healing

DOIs:

10.1002/lsm.22428

URLs:

<http://www.scopus.com/inward/record.url?scp=84955646488&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84955646488

Research output: Contribution to journal › Article › Scientific › peer-review

Mise au point d'un modèle animal original de cicatrice chéloïde

Keloid scar is a proliferative healing dysfunction formed by an excessive build-up of collagen fibers on the dermis. It is responsible of aesthetic and functional disabilities. There is no ideal treatment and recurrence occurs very often. Keloid scars occur only to human, that's why animal model needs to be made to study this pathology and new treatments. Few models have been described using human keloid scars implanted into subcutaneous tissue of nude mice or rat. To allow study of topical and laser treatment we have developed a new animal model using human keloid scar fragment with epidermal and dermal tissue implanted into back of nude mice like a full thickness skin graft. Keloid fragments from five donors have been grafted onto 40 nudes mice. Macroscopic and microscopic studies have been made at day 28, 56, 84 and 112. We observed integration of the fragments in all cases. Hyalinized collagen bundles were observed in all implant biopsies confirming the stability of the keloid architecture within 112 days. This model is easily reproducible and allows the study of topical treatment and laser due to the accessibility of the keloid.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Univ Paris 06, Centre National de la Recherche Scientifique (CNRS), Pierre & Marie Curie University - Paris 6, Institut de Recherche pour le Développement (IRD), Inria, Institut National de la Santé et de la Recherche Médicale (Inserm), Univ Sorbonne, CNRS,ICM,UMR S 1127,UMR 7225,U1127, INSERM,Inria Paris Rocquencourt,Inst Cerveau & Mo, Service de chirurgie plastique et maxillofacial, Laboratoire d'anatomie-pathologique, Hôpital Nord de Marseille, Chemin des Bourrely, Hôpital de la Conception

Contributors: Philandrianos, C., Gonnelli, D., Andrac-Meyer, L., Bruno, M., Magalon, G., Mordon, S.

Number of pages: 7

Pages: 246-252

Publication date: 2014

Peer-reviewed: Yes

Publication information

Journal: Annales de Chirurgie Plastique Esthétique

Volume: 59

Issue number: 4

ISSN (Print): 0294-1260

Ratings:

Scopus rating (2014): CiteScore 0.7 SJR 0.258 SNIP 0.532

Original language: French

ASJC Scopus subject areas: Surgery

Keywords: Athymic mice, Keloid, Nude mice, Scar, Wound healing

DOIs:

10.1016/j.anplas.2012.05.001

URLs:

<http://www.scopus.com/inward/record.url?scp=84904049452&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84904049452

Research output: Contribution to journal › Article › Scientific › peer-review

Comparison of five dermal substitutes in full-thickness skin wound healing in a porcine model

The wound healing attributes of five acellular dermal skin substitutes were compared, in a two-step procedure, in a porcine model. Ten pigs were included in this experimental and randomized study. During the first step, dermal substitutes (Integra[®], ProDerm[®], Renoskin[®], Matriderm[®] 2 mm and Hyalomatrix[®] PA) were implanted into full-thickness skin wounds and the epidermis was reconstructed during a second step procedure at day 21 using autologous split-thickness skin graft or cultured epithelial autograft. Seven pigs were followed-up for 2 months and 3 pigs for 6 months. Dermal substitute incorporation, epidermal graft takes, wound contraction and Vancouver scale were assessed, and histological study of the wounds was performed. Results showed significant differences between groups in dermis incorporation and in early wound contraction, but there was no difference in wound contraction and in Vancouver scale after 2 and 6 months of healing. We conclude there was no long-term difference of scar qualities in our study between the different artificial dermis. More, there was no difference between artificial dermis and the control group. This study makes us ask questions about the benefit of artificial dermis used in a two-step procedure.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Service de Chirurgie Plastique Hôpital Nord, Univ Lille Nord de France, Faculty of Medicine la Timone, Hôpital de la Conception

Contributors: Philandrianos, C., Andrac-Meyer, L., Mordon, S., Feuerstein, J. M., Sabatier, F., Veran, J., Magalon, G., Casanova, D.

Number of pages: 10

Pages: 820-829

Publication date: Sep 2012

Peer-reviewed: Yes

Publication information

Journal: BURNS

Volume: 38

Issue number: 6

ISSN (Print): 0305-4179

Ratings:

Scopus rating (2012): CiteScore 3.3 SJR 0.672 SNIP 1.165

Original language: English

ASJC Scopus subject areas: Surgery, Emergency Medicine, Critical Care and Intensive Care Medicine

Keywords: Artificial dermis, Dermal substitute, Porcine model, Skin wound healing

DOIs:

10.1016/j.burns.2012.02.008

URLs:

<http://www.scopus.com/inward/record.url?scp=84864132737&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84864132737

Research output: Contribution to journal > Article > Scientific > peer-review

The connection between ruptured cerebral aneurysms and odontogenic bacteria

Background: Patients with ruptured saccular intracranial aneurysms have excess long-term mortality due to cerebrovascular and cardiovascular diseases compared with general population. Chronic inflammation is detected in ruptured intracranial aneurysms, abdominal aortic aneurysms and coronary artery plaques. Bacterial infections have been suggested to have a role in the aetiology of atherosclerosis. Bacteria have been detected both in abdominal and coronary arteries but their presence in intracranial aneurysms has not yet been properly studied. **Objective:** The aim of this preliminary study was to assess the presence of oral and pharyngeal bacterial genome in ruptured intracranial aneurysms and to ascertain if dental infection is a previously unknown risk factor for subarachnoid haemorrhage. **Methods:** A total of 36 ruptured aneurysm specimens were obtained perioperatively in aneurysm clipping operations (n=29) and by autopsy (n=7). Aneurysmal sac tissue was analysed by real time quantitative PCR with specific primers and probes to detect bacterial DNA from several oral species. Immunohistochemical staining for bacterial receptors (CD14 and toll-like receptor-2 (TLR-2)) was performed from four autopsy cases. **Results** Bacterial DNA was detected in 21/36 (58%) of specimens. A third of the positive samples contained DNA from both endodontic and periodontal bacteria. DNA from endodontic bacteria were detected in 20/36 (56%) and from periodontal bacteria in 17/36 (47%) of samples. Bacterial DNA of the *Streptococcus mitis* group was found to be most common. *Aggregatibacter actinomycetemcomitans*, *Fusobacterium nucleatum* and *Treponema denticola* were the three most common periodontal pathogens. The highly intensive staining of CD14 and TLR-2 in ruptured aneurysms was observed. **Conclusions:** This is the first report showing evidence that dental infection could be a part of pathophysiology in intracranial aneurysm disease.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital, University of Tampere, Medical School, Ita-Suomen yliopisto

Contributors: Pyysalo, M. J., Pyysalo, L. M., Pessi, T., Karhunen, P. J., Öhman, J. E.

Number of pages: 5

Pages: 1214-1218

Publication date: 2013

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY

Volume: 84

Issue number: 11

ISSN (Print): 0022-3050

Ratings:

Scopus rating (2013): CiteScore 9.9 SJR 2.495 SNIP 1.912

Original language: English

ASJC Scopus subject areas: Surgery, Arts and Humanities (miscellaneous), Clinical Neurology, Psychiatry and Mental health

DOIs:

10.1136/jnnp-2012-304635

URLs:

<http://www.scopus.com/inward/record.url?scp=84885659901&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84885659901

Research output: Contribution to journal › Article › Scientific › peer-review

Long-term excess mortality of patients with treated and untreated unruptured intracranial aneurysms

Background and aim: Subarachnoid haemorrhage (SAH) patients have an excess mortality proportion in long-term outcome studies because of the high rate of cerebrovascular and cardiovascular deaths. The aim of the present study was to assess the excess long-term mortality among patients with unruptured aneurysms with no previous SAH and to compare excess mortality after coiling, clipping and without treatment. **Methods:** Between 1989 and 1999, a total of 1294 patients with intracranial aneurysms were admitted to our hospital. Of these, 1154 had previous SAH and were excluded leaving 140 patients with 178 intracranial unruptured aneurysms as the study population. The patients were followed up until death or by the end of April 2011. Causes of death were determined. Relative survival ratios (RSRs) were calculated and compared with the matched general population. **Results:** Mean follow-up time was 13 years (range 1-19). During the follow-up period, 36% of patients died. Death was caused by cerebrovascular event in half of the cases. There were 12% excess mortality at 15 years in men and 35% excess mortality in women compared with general population. Excess mortality among women over 50 years was significantly higher than that among men ($p=0.018$). **Conclusions:** Patients with untreated unruptured aneurysms have 50% excess long-term mortality compared with general population. Men with treated unruptured aneurysms have a survival proportion comparable with matched general population. Women, instead, have 28% excess mortality after surgical treatment and 23% excess mortality after endovascular treatment of unruptured aneurysms.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital, Finnish Cancer Registry

Contributors: Pyysalo, L., Luostarinen, T., Keski-Nisula, L., Öhman, J.

Number of pages: 5

Pages: 888-892

Publication date: 2013

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY

Volume: 84

Issue number: 8

ISSN (Print): 0022-3050

Ratings:

Scopus rating (2013): CiteScore 9.9 SJR 2.495 SNIP 1.912

Original language: English

ASJC Scopus subject areas: Surgery, Arts and Humanities (miscellaneous), Clinical Neurology, Psychiatry and Mental health

DOIs:

10.1136/jnnp-2012-303073

URLs:

<http://www.scopus.com/inward/record.url?scp=84879947090&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84879947090

Research output: Contribution to journal › Article › Scientific › peer-review

Long term outcome after subarachnoid haemorrhage of unknown aetiology

Background and purpose: The aim of this study was to assess the long term outcome after non-aneurysmal subarachnoid haemorrhage (SAH). **Methods:** 1154 patients with SAH were treated in our hospital between 1989 and 1999. From this patient population, 97 patients had a non-aneurysmal SAH. All hospital records and death certificates were studied and 33 patients were examined by MRI and MR angiography more than 9 years (mean 12 years) after the initial bleeding. **Results:** The cohort consisted of 97 patients. Mean follow-up time was 9 years (range 0-19). During the follow-up period, 13 patients (13%) died. Four (4%) died from the initial bleeding less than 5 weeks after the initial haemorrhage. There was no delayed mortality due to SAH or subsequent bleedings. MR angiography revealed no new findings in 33 surviving

patients. Conclusions: Excess mortality during the first year after SAH was higher than 4%, and remained thereafter comparable with the general population. There were no rebleedings and MR imaging did not reveal any vascular pathology that could explain the earlier SAH.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital, Medical Imaging Centre

Contributors: Pyysalo, L. M., Niskakangas, T. T., Keski-Nisula, L. H., Kähärä, V. J., Öhman, J. E.

Number of pages: 3

Pages: 1264-1266

Publication date: Nov 2011

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY

Volume: 82

Issue number: 11

ISSN (Print): 0022-3050

Ratings:

Scopus rating (2011): CiteScore 8.3 SJR 2.301 SNIP 1.864

Original language: English

ASJC Scopus subject areas: Clinical Neurology, Psychiatry and Mental health, Surgery, Arts and Humanities (miscellaneous)

DOIs:

10.1136/jnnp.2010.239335

URLs:

<http://www.scopus.com/inward/record.url?scp=80053620497&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 80053620497

Research output: Contribution to journal > Article > Scientific > peer-review

Reflux symptoms and side effects among patients with gastroesophageal reflux disease at baseline, during treatment with PPIs, and after nissen fundoplication

Background: There are no prospective studies available on the behavior of extraesophageal and esophageal symptoms and treatment-related side effects in patients without effective antireflux medication, receiving the most effective antireflux medication, and after laparoscopic fundoplication. Methods: Extraesophageal and esophageal reflux symptoms and treatment-related side effects were assessed in 60 patients while they were on no effective antireflux medication (three-week washout period), after three month of treatment with double-dose esomeprazole, and 3 months after laparoscopic Nissen fundoplication. Esophageal and extraesophageal reflux symptoms, rectal flatulence, and bloating were analyzed with the visual analog scale. In addition, dysphagia, rectal flatulence, and bloating were recorded as none, mild, moderate, or severe. Results: Both extraesophageal and esophageal reflux symptoms decreased after treatment with esomeprazole and were further reduced after fundoplication. Dysphagia and flatulence did not increase from baseline after surgery. Bloating decreased both after treatment with esomeprazole and after fundoplication. In contrast, dysphagia and increased flatus were found more often after surgery than during treatment with esomeprazole. Dysphagia and rectal flatulence were less common during treatment with esomeprazole than at baseline or after surgery. Conclusions: Both extraesophageal and esophageal reflux symptoms decreased after treatment with esomeprazole and were reduced further after fundoplication. Any treatment-related side effect was not increased after surgery when compared to baseline. However, compared to esomeprazole there was more dysphagia and flatulence after fundoplication.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital, Terveystalo Hospital, Turku University Hospital, Hatanpää Hospital, Jyväskylä Central Hospital

Contributors: Rantanen, T., Kiljander, T., Salminen, P., Ranta, A., Oksala, N., Kellokumpu, I.

Number of pages: 6

Pages: 1291-1296

Publication date: Jun 2013

Peer-reviewed: Yes

Publication information

Journal: WORLD JOURNAL OF SURGERY

Volume: 37

Issue number: 6
ISSN (Print): 0364-2313
Ratings:

Scopus rating (2013): CiteScore 4.6 SJR 1.401 SNIP 1.493

Original language: English

ASJC Scopus subject areas: Surgery, Medicine(all)

DOIs:

10.1007/s00268-013-1979-8

URLs:

<http://www.scopus.com/inward/record.url?scp=84877732649&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84877732649

Research output: Contribution to journal > Article > Scientific > peer-review

The impact of fibrin glue in the prevention of failure after Nissen fundoplication

Background and Aims: Good long term result after Nissen fundoplication is achieved in most of the patients in specialized centres. Still failure occurs in some cases and reoperation after failed conservative treatment is done in 3-6% of the cases. Reoperation is more dangerous and results worse than after primary fundoplication. Therefore we wanted to analyze factors related to failure of Nissen fundoplication with special emphasis on utilization of crural closure, anchoring of the fundic wrap and the use of fibrin glue. **Material and Methods:** Patients records of 258 patients were analyzed by an independent observer. Defective fundic wrap, recurrent oesophagitis and hiatal hernia were defined as failure. **Results:** Failure after Nissen fundoplication was found in 29 patients (14.9%). Crural closure ($p = 0.021$), anchoring of the wrap ($p = 0.020$) and fibrin glue ($p = 0.029$) decreased the incidence of failure. However, only crural closure ($p = 0.010$) and fibrin glue ($p = 0.019$) were independent factors in the prevention of failure. **Conclusions:** Fibrin glue as a new method might be worth utilizing to further decrease the incidence of failure after Nissen fundoplication. Because our study was retrospective, prospective randomized study should be performed before universal use of fibrin glue in the prevention of failure after fundoplication.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Department of Surgery, Kanta-Häme Central Hospital, Central Hospital of Seinäjoki, Forssa Hospital, Tampere University Hospital

Contributors: Rantanen, T., Neuvonen, P., Iivonen, M., Tomminen, T., Oksala, N.

Number of pages: 5

Pages: 181-185

Publication date: 2011

Peer-reviewed: Yes

Publication information

Journal: Scandinavian Journal of Surgery

Volume: 100

Issue number: 3

ISSN (Print): 1457-4969

Ratings:

Scopus rating (2011): CiteScore 2.3 SJR 0.501 SNIP 0.841

Original language: English

ASJC Scopus subject areas: Surgery

Keywords: Crural closure, Defective fundic wrap, Failure, Fibrin glue, Fundoplication, Oesophagitis

URLs:

<http://www.scopus.com/inward/record.url?scp=80053999325&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 80053999325

Research output: Contribution to journal > Article > Scientific > peer-review

Proliferative and anti-apoptotic activity of esophageal mucosa in gastroesophageal reflux disease is not affected by fundoplication: A 4-year follow-up study

Background: The role of fundoplication in the prevention of esophageal adenocarcinoma is controversial. Development of cancer is associated with proliferation and anti-apoptosis, for which little data exist regarding their response to fundoplication. **Methods:** Ki-67 and Bcl-2 expression was assessed in the esophagogastric junction (EGJ) and the distal and proximal esophagus of 20 patients with gastroesophageal reflux disease (GERD) treated by fundoplication and in 7 controls. Endoscopy was performed preoperatively and 6 (20 patients) and 48 months (16 patients) postoperatively. **Results:** There were positive correlations between Ki-67 and Bcl-2 levels in the EGJ ($p > 0.001$) and in the distal ($p = 0.001$) and proximal esophagus ($p = 0.013$). Compared to the preoperative level, Ki-67 expression was elevated in the distal ($p = 0.012$) and proximal ($p = 0.007$) esophagus at 48 months. In addition, compared to control values, Ki-67

expression was lower at the 6-month follow-up in the EGJ ($p = 0.037$) and the proximal esophagus ($p = 0.003$), and higher at the 48-month follow-up in the distal esophagus ($p = 0.002$). Compared to control values, Bcl-2 was lower at 6 months in the EGJ ($p = 0.038$). Conclusions: Proliferative activity after fundoplication increased in the long term in the distal esophagus despite a normal fundic wrap and healing of GERD.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Department of Gastroenterology and Alimentary Tract Surgery, Tampere University Hospital, Department of Surgery, Kanta-Häme Central Hospital, Division of General Thoracic and Esophageal Surgery, Helsinki University Central Hospital, Department of Pathology, University of Nord-Norge

Contributors: Rantanen, T. K., Oksala, N. K., Honkanen, T. T., Räsänen, J. V., Sihvo, E. I., Mattila, J. J., Paimela, H. M., Paavonen, T. K., Salo, J. A.

Number of pages: 8

Pages: 5-12

Publication date: Jun 2011

Peer-reviewed: Yes

Publication information

Journal: European Surgical Research

Volume: 47

Issue number: 1

ISSN (Print): 0014-312X

Ratings:

Scopus rating (2011): CiteScore 2.4 SJR 0.392 SNIP 0.711

Original language: English

ASJC Scopus subject areas: Surgery

Keywords: Anti-apoptosis, Bcl-2, Esophagitis, Fundoplication, Gastroesophageal reflux disease, Ki-67, Proliferation
DOIs:

10.1159/000326948

URLs:

<http://www.scopus.com/inward/record.url?scp=79955453135&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 79955453135

Research output: Contribution to journal > Article > Scientific > peer-review

Altered expression of HSP27 and HSP70 in distal oesophageal mucosa in patients with gastro-oesophageal reflux disease subjected to fundoplication

Background: Gastro-oesophageal reflux disease (GERD) is a risk factor for oesophageal adenocarcinoma. Although fundoplication cures reflux symptoms and oesophagitis, it remains controversial whether it is capable of preventing the development of oesophageal adenocarcinoma. Hsp27 and Hsp70 are associated with the development of cancer, whereas the effect of fundoplication on them is not known. Methods: The expression of Hsp27 and Hsp70 was assessed semiquantitatively from biopsies of oesophageal mucosa for a prospective cohort of 19 patients with GERD treated with fundoplication and 7 controls without GERD. Upper gastrointestinal endoscopy with biopsies from the oesophagogastric junction (EGJ) and the distal and proximal oesophagus were performed preoperatively (19 patients) and after recovery from GERD at 6 (19 patients) and 48 months (16 patients) postoperatively. Results: The expressions of both Hsp27 ($p = 0.001$) and Hsp70 ($p = 0.002$) in the distal oesophagus were lower in patients preoperatively and at 48 months postoperatively ($p < 0.001$ for both) than in controls. The patients' Hsp27 and Hsp70 levels were lower preoperatively in the proximal oesophagus ($p = 0.048$ for both) than in controls. Both Hsp27 ($p = 0.002$) and Hsp70 ($p = 0.003$) were lower in the distal oesophagus preoperatively and at 48 months postoperatively ($p = 0.003$ for Hsp27, $p = 0.004$ for Hsp70) than in the proximal oesophagus. Conclusions: Our results indicate that there may be some factor interfering with the mucosal defence system of the distal oesophagus in GERD that is uninfluenced by fundoplication and not associated with the acid-reflux-normalizing effect.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Department of Gastroenterology and Alimentary Tract Surgery, Tampere University Hospital, Department of Surgery, Kanta-Häme Central Hospital, Central Hospital of Seinäjoki

Contributors: Rantanen, T., Honkanen, T., Paavonen, T., Rantanen, L., Oksala, N.

Number of pages: 7

Pages: 168-174

Publication date: Feb 2011

Peer-reviewed: Yes

Publication information

Journal: EJSO

Volume: 37

Issue number: 2

ISSN (Print): 0748-7983

Ratings:

Scopus rating (2011): CiteScore 5.7 SJR 1.275 SNIP 1.411

Original language: English

ASJC Scopus subject areas: Oncology, Surgery

Keywords: Follow-up, Fundoplication, GERD, Heat shock proteins, Oesophageal adenocarcinoma

DOIs:

10.1016/j.ejso.2010.10.013

URLs:

<http://www.scopus.com/inward/record.url?scp=79251594208&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 79251594208

Research output: Contribution to journal › Article › Scientific › peer-review

Pitfalls of femoral titanium elastic nailing

Background and Aims: Despite several potential complications of elastic intramedullary nailing, it is currently the treatment of choice for femoral diaphyseal fractures in schoolaged children. This study aimed to critically evaluate the complications of titanium elastic nailing in pediatric femoral shaft fractures. **Material and Methods:** This study evaluated patients with a diaphyseal femoral fracture treated with titanium elastic nailing (TEN) in Tampere University Hospital in Finland. The study group included 32 children with a mean age of 9 years during a 5-year period, from 1 January 2003 to 31 December 2007. Data were collected from medical records and x-rays. Mean follow-up time was 42 months. **Results:** Of 32 patients, 9 (28%) reported a postoperative complication. Complications were associated with nail prominence in five (16%) patients and instability in four (12%) patients. In patients with nail prominence, the titanium elastic nailing–nail ends were unbent and 10–35 mm outside the cortex of the distal femur. The nail prominence caused pain and delayed knee mobilization until the nail was removed after a mean time of 4 months. In patients with fracture instability, the mean titanium elastic nailing–nail/ medullary canal diameter ratio was 46% and periosteal callus formation was 5.4 mm at the first control. In those with stable fractures, the values were 66% and 9.2 mm, respectively. **Conclusions:** Based on this study, two types of pitfalls in a small volume center were found. Titanium elastic nail ends were left unbent and too long. We recommend palpating the nail ends to exclude nail prominence and to verify free movement of the knee after nail cutting and bending. Fracture instability was caused by inserting titanium elastic nailing–nails that were too narrow. To avoid this complication, careful preoperative planning to select the proper-size titanium elastic nailing–nails and intraoperative testing of fracture stability under continuous fluoroscopy after the operation is advised.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital, Karolinska University Hospital, Turku University Hospital

Contributors: Salonen, A., Lahdes-Vasama, T., Mattila, V. M., Välipakka, J., Pajulo, O.

Number of pages: 6

Pages: 121-126

Publication date: 2015

Peer-reviewed: Yes

Publication information

Journal: Scandinavian Journal of Surgery

Volume: 104

Issue number: 2

ISSN (Print): 1457-4969

Ratings:

Scopus rating (2015): CiteScore 3 SJR 0.612 SNIP 0.989

Original language: English

ASJC Scopus subject areas: Surgery, Medicine(all)

Keywords: Complication, Diaphyseal femoral fracture, Pediatric, Titanium elastic nailing

URLs:

<http://www.scopus.com/inward/record.url?scp=84940449976&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84940449976

Research output: Contribution to journal › Article › Scientific › peer-review

Electronic Nose in the Detection of Wound Infection Bacteria from Bacterial Cultures: A Proof-of-Principle Study

Background: Soft tissue infections, including postoperative wound infections, result in a significant burden for modern society. Rapid diagnosis of wound infections is based on bacterial stains, cultures, and polymerase chain reaction assays, and the results are available earliest after several hours, but more often not until days after. Therefore, antibiotic treatment is often administered empirically without a specific diagnosis. **Methods:** We employed our electronic nose (eNose) system for this proof-of-concept study, aiming to differentiate the most relevant bacteria causing wound infections utilizing a set of clinical bacterial cultures on identical blood culture dishes, and established bacterial lines from the gaseous headspace. **Results:** Our eNose system was capable of differentiating both methicillin-sensitive *Staphylococcus aureus* (MSSA) and methicillin-resistant *Staphylococcus aureus* (MRSA), *Streptococcus pyogenes*, *Escherichia coli*, *Pseudomonas aeruginosa*, and *Clostridium perfringens* with an accuracy of 78% within minutes without prior sample preparation. Most importantly, the system was capable of differentiating MRSA from MSSA with a sensitivity of 83%, a specificity of 100%, and an overall accuracy of 91%. **Conclusions:** Our results support the concept of rapid detection of the most relevant bacteria causing wound infections and ultimately differentiating MRSA from MSSA utilizing gaseous headspace sampling with an eNose.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Faculty of Biomedical Sciences and Engineering, Tampere University Hospital, Fimlab Laboratories Ltd

Contributors: Saviauk, T., Kiiski, J. P., Nieminen, M. K., Tamminen, N. N., Roine, A. N., Kumpulainen, P. S., Hokkinen, L. J., Karjalainen, M. T., Vuento, R. E., Aittoniemi, J. J., Lehtimäki, T. J., Oksala, N. K.

Number of pages: 11

Pages: 1-11

Publication date: 2018

Peer-reviewed: Yes

Early online date: 10 Jan 2018

Publication information

Journal: European Surgical Research

Volume: 59

Issue number: 1-2

ISSN (Print): 0014-312X

Ratings:

Scopus rating (2018): CiteScore 3.4 SJR 0.591 SNIP 0.807

Original language: English

ASJC Scopus subject areas: Surgery

Keywords: Electronic nose, Methicillin-resistant *Staphylococcus aureus*, Point-of-care systems, Soft tissue infections, Wound infection

DOIs:

10.1159/000485461

Source: Scopus

Source ID: 85040367970

Research output: [Contribution to journal](#) › [Article](#) › [Scientific](#) › [peer-review](#)

Poststroke dementia is associated with recurrent ischaemic stroke

Objective: To investigate whether poststroke dementia (PSD) diagnosed after ischaemic stroke predicts recurrent ischaemic stroke in long-term follow-up. **Methods:** We included 486 consecutive patients with ischaemic stroke (388 with first-ever stroke) admitted to Helsinki University Central Hospital who were followed-up for 12 years. Dementia was diagnosed in 115 patients using the Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (DSM-III) criteria. The effects of risk factors and PSD on survival free of recurrent stroke were estimated using Kaplan-Meier log-rank analyses, and the HRs for stroke recurrence were calculated using Cox proportional hazards models. **Results:** In the entire cohort, patients with PSD had a shorter mean time to recurrent stroke (7.13 years, 95% CI 6.20 to 8.06) than patients without dementia (9.41 years, 8.89 to 9.92; log rank p

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), University of Helsinki, Tampere University Hospital

Contributors: Sibolt, G., Curtze, S., Melkas, S., Putaala, J., Pohjasvaara, T., Kaste, M., Karhunen, P. J., Oksala, N. K. J., Erkinjuntti, T.

Number of pages: 5

Pages: 722-726

Publication date: 2013

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY

Volume: 84

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Scopus rating (2013): CiteScore 9.9 SJR 2.495 SNIP 1.912

Original language: English

ASJC Scopus subject areas: Surgery, Arts and Humanities (miscellaneous), Clinical Neurology, Psychiatry and Mental health

DOIs:

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URLs:

<http://www.scopus.com/inward/record.url?scp=84878746888&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84878746888

Research output: Contribution to journal > Article > Scientific > peer-review

Incidence of knee dislocation and concomitant vascular injury requiring surgery: A nationwide study

BACKGROUND: Acute knee (tibiofemoral joint) dislocation is a serious knee injury, although population-based numbers and incidence rates of knee dislocation with or without concomitant vascular injury are unknown. **METHODS:** The study covered the whole adult population of 4 million persons (aged ≥ 18 years) in Finland during the 11-year period from January 1, 1998, to December 31, 2011. Data on hospitalization caused by acute knee dislocations and concomitant vascular injuries requiring operative treatment were obtained from the nationwide National Hospital Discharge Registry. **RESULTS:** During the 14-year study period, a total of 837 patients with knee dislocation diagnosis were hospitalized in Finland. The highest incidence rates in men were in persons aged 18 years to 29 years (incidence, 29 per 1 million person-years in 2011), and the incidence decreased by age, while in women, this incidence was rather similar in all age groups. The most common injury mechanism of knee dislocation was low-energy fall at the same level (46%). The median length of hospital stay was 2 days (range, 1-109 days). In 107 cases (13%), knee dislocation required immediate open (69 cases) or closed (38 cases) reduction in the operating room. Popliteal artery injury requiring acute surgical intervention was found in 13 patients (1.6%), and amputation at the level above the tibiofemoral joint was performed for one patient (0.1%). **CONCLUSION:** This is the first study describing the population-based incidence of acute knee dislocation. Men aged 18 years to 29 years had the highest incidence rates. Half of the injuries were low-energy trauma. Popliteal artery injury requiring surgical intervention was a rare concomitant injury, but when present, the injury required immediate surgical repair to avoid dramatic consequences.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital, University of Tampere, Medical School, UKK Institute Finland, Karolinska University Hospital, Department of Clinical Science, Intervention and Technology

Contributors: Sillanpää, P. J., Kannus, P., Niemi, S. T., Rolf, C., Felländer-Tsai, L., Mattila, V. M.

Number of pages: 5

Pages: 715-719

Publication date: Mar 2014

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF TRAUMA AND ACUTE CARE SURGERY

Volume: 76

Issue number: 3

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Scopus rating (2014): CiteScore 5.1 SJR 1.546 SNIP 1.593

Original language: English

ASJC Scopus subject areas: Critical Care and Intensive Care Medicine, Surgery

Keywords: Epidemiology, Incidence, Knee dislocation, Operative treatment, Popliteal artery

DOIs:

10.1097/TA.0000000000000136

URLs:

<http://www.scopus.com/inward/record.url?scp=84896737681&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84896737681

Research output: Contribution to journal › Article › Scientific › peer-review

Patellofemoral osteoarthritis in patients with operative treatment for patellar dislocation: A magnetic resonance-based analysis

Purpose: The clinical role of patellofemoral (PF) osteoarthritis (OA) in the outcome after PF stabilizing surgery is poorly understood. The study hypothesis was that PF cartilage lesions and OA are associated with a poor long-term outcome after PF stabilizing surgery. **Methods:** The study cohort included thirty-seven patients who underwent PF stabilizing surgery by traditional nonanatomic procedures and were evaluated a minimum of 10 years (range 10-21) after surgery. PF OA was assessed by magnetic resonance (MR) images and plain radiographs obtained at follow-up. Median patient age at follow-up was 33 years (29-43). **Results:** At the final follow-up, PF full-thickness cartilage lesions were observed on MR images in 29 (78%) patients. Only 46% of the patients reported satisfaction at follow-up, and dissatisfaction was associated with PF OA (full-thickness articular cartilage loss on MR images; $P = 0.022$). Especially high incidence, 89%, of medial patellar facet cartilage lesions were found among the patients dissatisfied with the result (16/18 patients) (*n. s.*). Eight (22%) of the 37 patients reported recurrent patellar instability episodes at follow-up. Median Kujala score was 83 points (range 55-98). **Conclusion:** Patellofemoral OA is a significant long-term risk of nonanatomic surgery for patellar instability and has a greater impact on subjective outcome than residual instability more than 10 years after surgery.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Centre for Military Medicine, Central Military Hospital Helsinki, Department of Orthopaedic Surgery, Tampere University Hospital

Contributors: Sillanpää, P. J., Mattila, V. M., Visuri, T., Mäenpää, H., Pihlajamäki, H.

Number of pages: 6

Pages: 230-235

Publication date: 2011

Peer-reviewed: Yes

Publication information

Journal: KNEE SURGERY SPORTS TRAUMATOLOGY ARTHROSCOPY

Volume: 19

Issue number: 2

ISSN (Print): 0942-2056

Ratings:

Scopus rating (2011): CiteScore 3.3 SJR 1.366 SNIP 1.174

Original language: English

ASJC Scopus subject areas: Orthopedics and Sports Medicine, Surgery

Keywords: Dislocation, Injury, Knee, Medial patellofemoral ligament (MPFL), Patella

DOIs:

10.1007/s00167-010-1285-z

URLs:

<http://www.scopus.com/inward/record.url?scp=78751580390&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 78751580390

Research output: Contribution to journal › Article › Scientific › peer-review

Balloon dilation of the cartilaginous portion of the Eustachian tube

Objective. Studies of balloon Eustachian tuboplasty (BET) have shown encouraging results in small series with short follow-ups. Our pilot study suggested that patients with protracted otitis media with effusion (OME) or atelectasis of the tympanic membrane (TM) could benefit from BET.

Study Design. A prospective study where subjects act as their own controls. Patients from the pilot study and additional cases were enrolled in this cohort with long-term follow-up.

Setting. Regional Academic Center.

Subjects and Methods. Out of 80 patients who underwent BET, 41 consecutive Eustachian tube (ET) operations were included. Subjects' inclusion criteria were OME and/or TM atelectasis, type B or C tympanograms, and inability to inflate their middle ears by Valsalva maneuver. All patients had longstanding ET dysfunction relieved only by repeated tympanostomies. Outcomes included ability to perform a Valsalva maneuver, audiometry, tympanometry, videoendoscopy of the ET with mucosal inflammation rating scores, and otomicroscopy.

Results. All cases were dilated successfully, without significant complications. Mean follow-up was 2.5 years (range, 1.5-4.2 years). Eighty percent (33/41) could do a Valsalva maneuver postoperatively; none of these ears required new tympanostomy tubes and subjective symptoms were relieved. Tympanometry results showed overall improvement. Nine patients had persistent perforations and 3 declined removal of the tube. Subjective symptoms were not relieved for 10%

(4/41).

Conclusion. The results show that BET can effectively improve ET function in ears with OME or atelectasis. The procedure is well tolerated and without significant complications. The follow-up continues and we are investigating possible reasons for failures.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Rikshospitalet-Radiumhospitalet HF, Harvard Medical School

Contributors: Silvola, J., Kivekäs, I., Poe, D. S.

Number of pages: 6

Pages: 125-130

Publication date: 27 Jul 2014

Peer-reviewed: Yes

Publication information

Journal: OTOLARYNGOLOGY: HEAD AND NECK SURGERY

Volume: 151

Issue number: 1

ISSN (Print): 0194-5998

Ratings:

Scopus rating (2014): CiteScore 3.2 SJR 1.176 SNIP 1.341

Original language: English

ASJC Scopus subject areas: Otorhinolaryngology, Surgery

Keywords: balloon dilation, Eustachian tube, secretory otitis media

DOIs:

10.1177/0194599814529538

URLs:

<http://www.scopus.com/inward/record.url?scp=84921649937&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84921649937

Research output: Contribution to journal > Article > Scientific > peer-review

Upper airway changes in Pierre Robin sequence from childhood to adulthood

Structured Abstract: Objectives: To investigate pharyngeal airway changes in patients with Pierre Robin sequence (PRS) longitudinally from childhood to adulthood. Setting and Sample Population: Cleft Lip and Palate Unit, Clinic of Orthodontics, University of Zurich. Twenty-four patients born between 1970 and 1990 with non-syndromic PRS. Materials and Methods: Lateral cephalograms at age 5 (T1), 10 (T2), 15 (T3) and 20 (T4) years were available. Variables describing pharyngeal airway dimensions, soft palate morphology, tongue and hyoid position, skeletal morphology and head posture were assessed. Results: A significant increase in nasopharyngeal depth was found over the entire observation period (T1 10.7 to T4 19.1 mm, $p < 0.001$), especially between T2 and T3 (change 3.8 mm, $p < 0.001$), and was mainly due to adenoid recession ($r = -0.75$, $p < 0.001$; variation explained by 56%). Increase in velopharyngeal depth mainly took place between T3 and T4 (change 2.3 mm, $p < 0.01$). It was due to more anterior tongue posture ($r = 0.65$, $p < 0.001$; 42.5% of variation explained), in turn allowing the soft palate to take a more vertical position ($r = -0.52$, $p < 0.001$). Increase in oropharyngeal depth was associated with head extension and anterior mandibular positioning (36% of variation explained). However, significance was not reached (T1 8.3 to T4 9.8 mm, $p > 0.05$). Conclusions: Upper airway dimensions in children with PRS improve with time, except for the oropharyngeal airway. Despite large interindividual variation, the mean remained in the lower reaches of normality described in other studies. Thus, further research should investigate the prevalence of obstructive sleep apnoea in adults with PRS.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), University of Zurich

Contributors: Staudt, C. B., Gnoinski, W. M., Peltomäki, T.

Number of pages: 12

Pages: 202-213

Publication date: Nov 2013

Peer-reviewed: Yes

Publication information

Journal: ORTHODONTICS AND CRANIOFACIAL RESEARCH

Volume: 16

Issue number: 4

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Original language: English

ASJC Scopus subject areas: Orthodontics, Oral Surgery, Otorhinolaryngology, Surgery

Keywords: Airway, Cephalometry, Child, Longitudinal, Pierre Robinsequence

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10.1111/ocr.12019

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<http://www.scopus.com/inward/record.url?scp=84885058542&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84885058542

Research output: Contribution to journal > Article > Scientific > peer-review

Commonly used fiber tips in endovenous laser ablation (EVLA): An analysis of technical differences

Many different types of fiber tips have been developed over the last few years to be used in endovenous laser ablation (EVLA) procedures. All these new but different tips claim a certain superiority over the other tips. Evidence for a best tip is however lacking. Four of these fiber tips have been compared in this article: (1) the bare fiber, (2) the Tulip-Tip, (3) the NeverTouch™ tip, and (4) the radially emitting tip. The aim of this paper is to provide information on the technical differences between these fiber tips and differences in their underlying heat transfer mechanisms. Although all tips are effective in the primary goal of EVLA, namely to occlude the incompetent vein, they differ in side effects, they differ in side effects, practicality, and cost. Although these new tips have improved EVLA, the perfect tip is not on the market yet.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Tobrix BV, Eindhoven University of Technology, Free Unirsky Medical Center, St.

Andries Hospital, Lille University Hospital - CHRU

Contributors: Stokbroekx, T., De Boer, A., Verdaasdonk, R. M., Vuylsteke, M. E., Mordon, S. R.

Number of pages: 7

Pages: 501-507

Publication date: 2014

Peer-reviewed: Yes

Publication information

Journal: LASERS IN MEDICAL SCIENCE

Volume: 29

Issue number: 2

ISSN (Print): 0268-8921

Ratings:

Scopus rating (2014): CiteScore 3.7 SJR 0.9 SNIP 1.407

Original language: English

ASJC Scopus subject areas: Surgery, Dermatology, Medicine(all)

Keywords: Endovenous laser ablation (EVLA), Fiber tips, Heat transfer, Varicose veins

DOIs:

10.1007/s10103-013-1475-2

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Source: Scopus

Source ID: 84897076848

Research output: Contribution to journal > Article > Scientific > peer-review

Identification of breast tumors from diathermy smoke by differential ion mobility spectrometry

Introduction: Breast cancer is the most frequent cancer in women worldwide. The primary treatment is breast-conserving surgery or mastectomy with an adequate clearance margin. Diathermy blade is used extensively in breast-conserving surgery. Surgical smoke produced as a side product has cancer-specific molecular features. Differential mobility spectrometry (DMS) is a rapid and affordable technology for analysis of complex gas mixtures. In our study we examined surgical smoke from malignant and benign breast tissue created with a diathermy blade using DMS. **Material and methods:** Punch biopsies of 4 mm diameter from breast cancer surgical specimens were taken during gross dissection of fresh surgical specimen and placed in a well plate. The measurement system is a custom-built device called automatic tissue analysis system (ATAS) based on a DMS sensor. Each specimen was incised with a diathermy blade and the surgical smoke was analyzed. **Results:** We examined 106 carcinoma samples from 21 malignant breast tumors. Benign samples (n = 198) included macroscopically normal mammary gland (n = 82), adipose tissue (n = 88) and vascular tissue (n = 28). The classification accuracy when comparing malignant samples to all benign samples was 87%. The sensitivity

was 80% and the specificity was 90%. The classification accuracy of carcinomas to ductal and lobular was 94%, 47%, respectively. Conclusions: Benign and malignant breast tissue can be identified with ATAS. These results lay foundation for intraoperative margin assessment with DMS from surgical smoke.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Sensor Technology and Biomeasurements (STB), Tampere University Hospital, Fimlab Laboratories Ltd, Hatanpää Hospital

Contributors: Sutinen, M., Kontunen, A., Karjalainen, M., Kiiski, J., Hannus, J., Tolonen, T., Roine, A., Oksala, N.

Number of pages: 6

Pages: 141-146

Publication date: Feb 2019

Peer-reviewed: Yes

Early online date: 2018

Publication information

Journal: European Journal of Surgical Oncology

Volume: 45

Issue number: 2

ISSN (Print): 0748-7983

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Original language: English

ASJC Scopus subject areas: Surgery, Oncology

Keywords: Breast cancer, Differential ion mobility spectrometry, Electrosurgery, Surgical margin, Surgical smoke

DOIs:

10.1016/j.ejso.2018.09.005

Source: Scopus

Source ID: 85055188962

Research output: [Contribution to journal](#) › [Article](#) › [Scientific](#) › [peer-review](#)

Predictors of low back pain in physically active conscripts with special emphasis on muscular fitness

Background context: Association between low physical fitness and low back pain (LBP) is contradictory in previous studies. **Purpose:** The objective of the present prospective cohort study was to investigate the predictive associations of various intrinsic risk factors in young conscripts for LBP, with special attention to physical fitness. **Study design:** A prospective cohort study. **Patient sample:** A representative sample of Finnish male conscripts. In Finland, military service is compulsory for male citizens and 90% of young men enter into the service. **Outcome measures:** Incidence of LBP and recurrent LBP prompting a visit at the garrison health clinic during 6-month military training. **Methods:** Four successive cohorts of 18- to 28-year-old male conscripts (N=982) were followed for 6 months. Conscripts with incidence of LBP were identified and treated at the garrison clinic. Predictive associations between intrinsic risk factors and LBP were examined using multivariate Cox proportional hazard models. **Results:** The cumulative incidence of LBP was 16%, the incidence rate being 1.2 (95% confidence interval [CI], 1.0-1.4) per 1,000 person-days. Conscripts with low educational level had increased risk for incidence of LBP (hazard ratio [HR], 1.6; 95% CI, 1.1-2.3). Conscripts with low dynamic trunk muscle endurance and low aerobic endurance simultaneously (ie, having coimpairment) at baseline also had an increased risk for incidence of LBP. The strongest risk factor was coimpairment of trunk muscular endurance in tests of back lift and push-up (HR, 2.8; 95% CI, 1.4-5.9). **Conclusions:** The increased risk for LBP was observed among young men who had a low educational level and poor fitness level in both muscular and aerobic performance.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital, UKK Institute Finland, Centre for Military Medicine, General Headquarters of Finnish Defence Forces, Staff Department

Contributors: Taanila, H. P., Suni, J. H., Pihlajamäki, H. K., Mattila, V. M., Ohrankämnen, O., Vuorinen, P., Parkkari, J. P.

Number of pages: 12

Pages: 737-748

Publication date: Sep 2012

Peer-reviewed: Yes

Publication information

Journal: SPINE JOURNAL

Volume: 12

Issue number: 9

ISSN (Print): 1529-9430

Ratings:

Scopus rating (2012): CiteScore 4.8 SJR 1.459 SNIP 1.524

Original language: English

ASJC Scopus subject areas: Clinical Neurology, Surgery

Keywords: Low back pain, Military training, Physical fitness, Risk factors, Trunk muscle endurance

DOIs:

10.1016/j.spinee.2012.01.006

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<http://www.scopus.com/inward/record.url?scp=84867066714&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84867066714

Research output: Contribution to journal › Article › Scientific › peer-review

Independent factors predicting early lower limb intra-arterial thrombolysis failure

Background Risk factors for early catheter-directed intra-arterial thrombolysis failure in acute lower limb ischemia remain unclear. **Methods** One hundred forty-nine limbs with acute artery or bypass graft thrombosis underwent catheter-directed thrombolysis (maximum of 48 hours). A retrospective data analysis was carried out to assess possible risk factors for early, 30-day treatment failure. Results Seventy-nine men (53%) and 70 women (47%) with a median age of 70 (range 32-93) years were treated. Treatment outcomes were determined as success (N = 115, 77%) or failure (N = 34, 23%). The failure criteria comprised rapid progression of ischemia (N = 4, 2.7%) and major bleeding complications (N = 2, 1.3%), both requiring thrombolysis termination and surgery. Inability to reopen native arteries/grafts (N = 10, 6.7%), run-off vessels (N = 10, 6.7%), in-hospital death (N = 4, 2.7%), the need for major amputation (N = 13, 8.7%), and reocclusions (N = 5, 3.4%) within the 30-day follow-up period were also considered as failures. Multivariate analysis of the risk factors' impact on the success of thrombolysis revealed such independent parameters as hypercholesterolemia (OR 0.16, 95% CI 0.06-0.42, P <0.0001), previous bypass grafting of the ipsilateral limb (OR 0.18, 95% CI 0.06-0.53, P = 0.002), and duration of ischemia prior to the initiation of thrombolysis (OR 0.95, 95% CI 0.91-0.99, P = 0.009, per day). **Conclusion** According to our results, factors independently predicting early failure include hypercholesterolemia, previous bypass grafting, and a delay in treatment initiation. Moreover, catheter-directed intra-arterial thrombolysis can be considered safe and effective in the treatment of acute lower limb ischemia.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital

Contributors: Vakhitov, D., Suominen, V., Korhonen, J., Oksala, N., Salenius, J. P.

Number of pages: 6

Pages: 164-169

Publication date: Jan 2014

Peer-reviewed: Yes

Publication information

Journal: ANNALS OF VASCULAR SURGERY

Volume: 28

Issue number: 1

ISSN (Print): 0890-5096

Ratings:

Scopus rating (2014): CiteScore 1.8 SJR 0.655 SNIP 0.914

Original language: English

ASJC Scopus subject areas: Cardiology and Cardiovascular Medicine, Surgery

DOIs:

10.1016/j.avsg.2012.11.016

URLs:

<http://www.scopus.com/inward/record.url?scp=84890554555&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84890554555

Research output: Contribution to journal › Article › Scientific › peer-review

Three-dimensional skeletonization and symbolic description in vascular imaging: Preliminary results

Objective: A general method was developed to analyze and describe tree-like structures needed for evaluation of complex morphology, such as the cerebral vascular tree. Clinical application of the method in neurosurgery includes planning of the surgeon's intraoperative gestures. **Method:** We have developed a 3D skeletonization method adapted to tubular forms with symbolic description. This approach implements an iterative Dijkstra minimum cost spanning tree, allowing a branch-by-branch skeleton extraction. The proposed method was implemented using the laboratory software platform (ArtiMed). The 3D skeleton approach was tested on simulated data and preliminary trials on clinical datasets mainly based on magnetic

resonance image acquisitions. Results: A specific experimental evaluation plan was designed to test the skeletonization and symbolic description methods. Accuracy was tested by calculating the positioning error, and robustness was verified by comparing the results on a series of 18 rotations of the initial volume. Accuracy evaluation showed a Hausdorff's distance always smaller than 17 voxels and Dice's similarity coefficient greater than 70 %. Conclusion: Our method of symbolic description enables the analysis and interpretation of a vascular network obtained from angiographic images. The method provides a simplified representation of the network in the form of a skeleton, as well as a description of the corresponding information in a tree-like view.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, LAGIS CNRS UMR 8146 Université Lille 1, Univ Lille Nord de France, Lille University Hospital

Contributors: Verscheure, L., Peyrodie, L., Dewalle, A. S., Reyns, N., Betrouni, N., Mordon, S., Vermandel, M.

Number of pages: 14

Pages: 233-246

Publication date: Mar 2013

Peer-reviewed: Yes

Publication information

Journal: INTERNATIONAL JOURNAL OF COMPUTER ASSISTED RADIOLOGY AND SURGERY

Volume: 8

Issue number: 2

ISSN (Print): 1861-6410

Ratings:

Scopus rating (2013): CiteScore 2.9 SJR 0.557 SNIP 1.164

Original language: English

ASJC Scopus subject areas: Surgery, Radiology Nuclear Medicine and imaging, Health Informatics

Keywords: 3D skeletonization, Angiography, Medical imaging, Symbolic description, Vascular network

DOIs:

10.1007/s11548-012-0784-4

URLs:

<http://www.scopus.com/inward/record.url?scp=84878844318&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84878844318

Research output: Contribution to journal > Article > Scientific > peer-review

Microvascular free flap reconstruction of skull base penetrating tumors

This is a follow-up study of 31 consecutive patients who underwent skull base tumor resection and microvascular tissue reconstruction in anterior and middle cranial fossa. Parameters recorded included factors related to operation, hospital stay, and outcome. All patients had a minimum follow-up of 5 years. There were no flap losses and no reoperations due to anastomoses-related complications. Five of 30 patients had cerebrospinal fluid leak that resolved with spinal drain except in one case, where the flap was placed incorrectly and the patient died of meningitis. Two other patients died due to early complications of the surgery. Although the complication rate was quite high, we consider this type of surgery worth performing, and even palliative surgery is to be considered in selective cases. Rectus abdominis flap due to its pliability and long pedicle proved to be most suitable flap together with superficial temporal artery and vein as recipient vessels.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Helsinki University Central Hospital, Tampere University Hospital, University of Helsinki

Contributors: Vuola, J., Öhman, J., Mäkitie, A. A.

Number of pages: 7

Pages: 313-319

Publication date: 2011

Peer-reviewed: Yes

Publication information

Journal: JOURNAL OF RECONSTRUCTIVE MICROSURGERY

Volume: 27

Issue number: 5

ISSN (Print): 0743-684X

Ratings:

Scopus rating (2011): CiteScore 1.8 SJR 0.832 SNIP 0.779

Original language: English
ASJC Scopus subject areas: Surgery
Keywords: complication, free flap, Neoplasm, outcome, reconstruction, skull base
DOIs:
10.1055/s-0031-1278715
URLs:

<http://www.scopus.com/inward/record.url?scp=79959839420&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 79959839420

Research output: Contribution to journal › Article › Scientific › peer-review

Endovenous laser ablation of the great saphenous vein using a bare fibre versus a tulip fibre: A randomised clinical trial

Objective: This clinical trial aimed to evaluate the clinical results of the use of a tulip fibre versus the use of a bare fibre for endovenous laser ablation. **Methods:** In a multicentre prospective randomised trial 174 patients were randomised for the treatment of great saphenous vein reflux. A duplex scan was scheduled 1 month, 6 months and 1 year postoperatively. Echymosis was measured on the 5th postoperative day. In addition, pain, analgesics requirement, postoperative quality of life (CIVIQ 2) and patient satisfaction rate were noted. **Results:** Patients treated with a tulip fibre had significantly less postoperative ecchymosis (0.04 vs. 0.21; $p < 0.001$) and pain (5th day) (1.00 vs. 2.00; $p < 0.001$) and had a better postoperative quality of life (27 vs. 32; $p = 0.023$). There was no difference in analgesic intake ($p = 0.11$) and patient satisfaction rate ($p = 0.564$). The total occlusion rate at 1 year was 97.02% and there was no significant difference between the two groups ($p = 0.309$). **Conclusion:** Using a tulip fibre for EVLA of the great saphenous vein results, when compared with the use of a bare fibre, in equal occlusion rates at 1 year but causes less postoperative ecchymosis and pain and in a better postoperative quality of life.

General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Sint-Andriesziekenhuis, University Hospital Gasthuisberg, Univ Lille Nord de France, Department of Vascular Surgery

Contributors: Vuylsteke, M. E., Thomis, S., Mahieu, P., Mordon, S., Fourneau, I.

Number of pages: 6

Pages: 587-592

Publication date: Dec 2012

Peer-reviewed: Yes

Publication information

Journal: EUROPEAN JOURNAL OF VASCULAR AND ENDOVASCULAR SURGERY

Volume: 44

Issue number: 6

ISSN (Print): 1078-5884

Ratings:

Scopus rating (2012): CiteScore 6.1 SJR 1.723 SNIP 1.733

Original language: English

ASJC Scopus subject areas: Surgery, Cardiology and Cardiovascular Medicine

Keywords: Endovenous laser ablation, Tulip fibre, Varicose veins

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Endovenous laser ablation: A review of mechanisms of action

Background: The aim of this article is to summarize and review the proposed theories on the laser action during endovenous ablation. **Methods:** Laser mechanics and laser-tissue interaction are summarized from articles found in literature. Several theories, like the "steam bubble theory," the "direct contact theory," the "heat pipe," and "direct light energy absorption" are discussed. **Results:** The laser light emitted intraluminally can be absorbed, scattered, or reflected. Reflection is negligible in the near-infrared spectrum. By combining absorption and scattering, the optical extinction of different wavelengths related to different biological tissues can be determined. The direct contact of the fiber tip and the vein wall may be a way of destroying the vein wall, but results in ulcerations and perforations of the vein wall. Avoiding this contact, and allowing direct light absorption into the vein wall, results in a more homogenous vein wall destruction. If the energy is mainly absorbed by the intraluminal blood, the laser fiber will act as a heat pipe. Histological studies show that a more circumferential vein wall destruction can be obtained when the vein is emptied of its intraluminal blood. The use of tumescent liquid reinforces spasm of the vein and protects the perivenous tissue. **Conclusion:** Several factors play an

important role in the mechanism of endovenous laser ablation. Direct energy absorption by the vein wall is the most efficient mechanism. It is important to empty the vein of its intraluminal blood and to inject tumescent liquid around the vein.

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Endovenous laser ablation: The role of intraluminal blood

Objective: In this histological study, the role of the intraluminal blood during endovenous laser ablation was assessed.
Methods: In 12 goats, 24 lateral saphenous veins were treated with a 1500-nm diode laser. Four goats were treated in an anti-Trendelenburg position (group 1). The next four goats were treated in a Trendelenburg position (group 2) and the remaining four goats in the Trendelenburg position with additional injection of tumescent liquid (group 3). Postoperatively, the veins were removed after 1 week and sent for histological examination. We measured the number of perforations. Vein wall necrosis and the perivenous tissue destruction were quantified using a graded scale. **Results:** The 'calculated total vein wall destruction' was significantly higher in the third group (81.83%), as compared with groups one (61.25%) ($p < 0.001$) and two (65.92%) ($p < 0.001$). All three groups showed a significant difference in the perivenous tissue destruction scale ($p < 0.001$) with the lowest score occurring in the third group. Vein wall perforations were significantly more frequent in groups one and two as compared with the third group (T-test respectively $p < 0.001$, $p = 0.02$). **Conclusion:** A higher intraluminal blood volume results in reduced total vein wall destruction. Injection of tumescent liquid prevents the perivenous tissue destruction and minimises the number of perforations.

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