Fibrin Tissue Adhesive in Head and Neck Surgery

EMBASE

Search strategy

Notes:
/su = subheading surgery
TERM/ = Thesaurus term
exp TERM/ = Thesaurus term exploded to include narrower terms
tonsil* = keyword root. Will find all instances of the root with any number of letters following
keyword ADJ keyword = one keyword ADJACENT to another in any order
keyword ADJ2 keyword = one keyword within 2 terms of another in any order
NB words such as if, but, and, for, to etc do not count when using ADJ2
ti.ab = searching title and abstract fields
.af = searching any field

1 EMBASE exp HEAD AND NECK SURGERY/ 113815 Apply Limits

2 EMBASE exp HEAD AND NECK CANCER/su OR exp EYE CANCER/su OR exp FACE CANCER/su OR exp HEAD AND NECK CARCINOMA/su OR exp HEAD AND NECK SQUAMOUS CELL CARCINOMA/su OR exp HEAD CANCER/su OR exp JAW CANCER/su OR exp LIP CANCER/su OR exp MOUTH CANCER/su OR exp NECK CANCER/su OR exp NOSE CANCER/su OR exp ORBIT CANCER/su OR exp PARanasal sinus CANCer/su OR exp PHarynx CANCer/su OR exp Salivary Gland CANCer/su OR exp Tongue CANCer/su OR exp Tonsil CANCer/su OR exp Head and Neck Disease/su OR exp Head and Neck Infection/su OR exp Head and Neck Injury/su OR exp Head and Neck Malformation/su [su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery, su=Surgery] 117338 Apply Limits

3 EMBASE exp HEAD AND NECK TRAUMA/su [su=Surgery] 22519 Apply Limits

4 EMBASE (head* OR neck*).ti,ab 568662 Apply Limits

5 EMBASE exp TONSILLECTOMY/ 12505 Apply Limits

6 EMBASE tonsil*.af 38731 Apply Limits

7 EMBASE exp RHYTIDOPLASTY/ 3371 Apply Limits
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We investigated the impact of fibrin glue on postoperative drainage amount and duration in head and neck cancer patients who underwent neck dissection. This study was a prospective randomized controlled trial. Patients who were scheduled to undergo neck dissection due to head and neck cancer were eligible for this study. After receiving a detailed explanation, all patients signed
an informed consent form before enrollment. Patients were then randomly assigned to the study group (fibrin glue) or control group. In the study group, 2 ml of fibrin glue (Tissucol<sup>®</sup>; Duploject, Baxter AG) was applied on the surface of the surgical wound before closure. Basic demographic data along with tumor-related features, operation-related variables, postoperative drainage amount/duration, postoperative pain, and analgesic usage were collected and analyzed. A total of 15 patients were included in the final analyses, with eight patients in the study group and seven patients in the control group. No significant differences were found between the two groups in age, gender, primary site, clinical N stage, neck dissection levels, perioperative bleeding, postoperative drainage amount/duration, hospitalization duration, and postoperative pain status. The application of 2 ml fibrin glue by the method described herein did not reduce the postoperative drainage amount/duration nor the postoperative pain status in patients who underwent neck dissection.


AIM: To observe the clinical results of pterygium excision combined with conjunctival autograft transplantation using fibrin glue. METHODS: A total of 60 patients (60 eyes) with primary nasal pterygium were randomly divided into two groups: the fibrin glue group (experimental group, 30 eyes) and suture group (control group, 30 eyes). All patients underwent pterygium excision combined with conjunctival autograft transplantation. In the experimental group autograft was attached to sclera with fibrin glue while in control group 10-0 polyamide was used. The patients were followed up for 6mo. The time of operation, post operation comfort, complications and recurrence were evaluated. RESULTS: The average surgical time was 24.5+/−6.5min with fibrin glue group while 35.2+/−5.4min in with suture group, with statistically significant difference between two groups (P<0.05). Pain and foreign body sensation was significantly less with fibrin glue group than that in the control group (P<0.05). No severe postoperative complication occurred both in two groups. The incidence of subconjunctival hemorrhage in the experimental group was lower than that in the control group (P<0.05). 1 case (3%) of fibrin glue group, 3 cases (10%) of suture group had recurrence at the end of follow up 6mo. CONCLUSION: It’s a safe and effective way to attach conjunctival autograft during pterygium surgery by fibrin glue. It can reduce surgical time, postoperative complications and relieve postoperative discomfort.


Objectives: Evaluate the advantages and disadvantages of Evicel fibrin sealant when used in thyroid surgery closure, taking into account the following endpoints: postoperative drain output, time to drain removal, length of admission, and adverse events. Methods: From June 2010 to January 2014, an institutional review board-approved prospective, randomized, doubleblind study of Evicel
versus a saline control was conducted on 70 subjects receiving total thyroidectomy or hemithyroidectomy. Twenty-eight received Evicel and 27 received saline; data from 15 subjects were eliminated due to protocol violations. The mean age was 50.3 (range, 21 to 73). Results: Comparisons of baseline characteristics, including age, sex, and type of surgery, revealed successful subject randomization. There was no significant difference in drain output between Evicel (median [interquartile range]: 96.3 mL [73.3-139.3 mL]) and placebo (120.0 mL [68.8-161.5 mL], \( P = .334 \)). Drain time (37.9 hours [25.2-48.7 hours] vs 43.6 hours [37.6-58.1 hours]) and hospital stay (45.5 hours [33.4-53.8 hours] vs 50.9 hours [44.1-69.4 hours]) were also shorter for Evicel, but again these differences were not significant (\( P = .101 \) and .526, respectively). For the subjects undergoing total thyroidectomy, there was a significant reduction in drain output (103.5 mL [80.0-138.6 mL] vs 150.0 mL [120.0-188.5 mL], \( P = .035 \)) and drain time (40.3 hours [26.2-49.1 hours] vs 47.1 hours [42.0-67.8 hours], \( P = .035 \)) with Evicel. Hospital stay in this subgroup was shorter with Evicel (50.3 hours [43.6-54.9 hours] vs 59.4 hours [48.4-70.6 hours]), but this result was not significant (\( P = .246 \)). No outcomes were significant in the hemithyroidectomy subgroup. Nine adverse events occurred in the Evicel group compared to 3 for placebo (\( P = .101 \)).

Conclusions: Evicel sealant appears to be a safe, effective method to reduce serous drain output following total thyroidectomy but has a limited role in hemithyroidectomy due to low levels of baseline drain output.


OBJECTIVE: The aim of the study was to radiologically and histologically evaluate the graft healing and volumetric changes after lateral augmentation with two different compositions of deproteinized bovine bone (DPBB) and autogenous bone (AB).MATERIAL AND METHODS: Thirteen patients with a mean age of 59.6 +/- 12.1 years (six men and seven women) were included in this randomized and controlled trial, designed as a split-mouth study. Ten edentulous and four partially edentulous jaws with an alveolar ridge width of <4 mm were laterally augmented with a graft composition of 60 : 40 (DPBB/AB) on one side and 90 : 10 (DPBB/AB) on the contralateral side. Cone beam computed tomography (CB/CT) was obtained immediately postoperatively and after a healing period of 7.5 months. Width changes were measured on CB/CT scans. After a mean healing period of 8.1 months (range, 7.9-8.3), biopsies were retrieved perpendicular to the crest from each graft by means of a trephine bur. Histomorphometry was performed, and the following variables were recorded: Ingrowth of new bone (percentage of total graft width), percentage of DPBB, bone and soft tissue, and percentage of DPBB particles in contact with bone.RESULTS: The mean gained width of the alveolar crest after 7.5 months was significantly more for the 60 : 40 mixture compared with the 90 : 10 mixture, 3.5 (+/-1.3) mm and 2.9 (+/-1.3) mm, respectively. There was a significant difference in graft width reduction between 60 : 40 and 90 : 10 after 7.5 months, 37 (+/-19.9)% and 46.9 (+/-23.5)%, respectively. New bone ingrowth had occurred in 82.1 (+/-23.3)% and
82.3 (+/-26.6)% of the graft, respectively. There were no statistical differences between fractions of different tissues between the 90 : 10 and 60 : 40 compositions. However, there were significantly more soft tissue and less new bone formation closer to the periosteum compared with the graft portion closer to the residual bone in both 60 : 40 and 90 : 10 compositions. CONCLUSIONS: There was significantly less graft width reduction with a mixture of 60 : 40 (DPBB/AB) compared with a mixture of 90 : 10 composition, but the results from the histomorphometry showed no statistical differences comparing the groups.


Platelet gels (PG) are blood-derived biomaterials that are generally obtained through the activation of a platelet-rich-plasma or a platelet concentrate in plasma by thrombin or calcium chloride, resulting in the simultaneous conversion of fibrinogen into a fibrin gel and in the generation of a platelet releasate rich in a physiological cocktail of growth factors. To reinforce the physical strength of the fibrin network, a fibrinogen-rich fraction -generally cryoprecipitate- can be added to the platelet fraction prior to activation, resulting in the generation of platelet fibrin glue (PFG). PG and PFG, prepared from single donations, either autologous or allogeneic, are increasingly used, alone or in combination with grafting materials, in various field of regenerative medicine where the presence of growth factors is expected to stimulate the healing of soft or hard tissues. Being obtained from human blood they are physiological and biodegradable preparations and do not induce tissue necrosis. So far the viral safety of most allogeneic PG and PFG relies on donors selection and donation testing, as is the case for all non-virally-inactivated blood components for transfusion. Major fields of clinical applications of PG and PFG in osseous tissue regeneration include maxillo-facial surgery, implantology, reconstructive and plastic surgery. PG is also used for enhancing the healing of soft tissues, most particularly recalcitrant lower extremity ulcers of various etiologies, and burns. Newer promising indications include the treatment of osteo-arthritis and joint inflammation, and the repair of musculoskeletal tissue lesions in sports medicine. Autologous PG and PFG are mostly 'home-made' single-donor preparations prepared in medical devices. They suffer from the variability in donors characteristics and in isolation procedures of the platelet fraction. Clinical application methods are not standardized. Variability in autologous products characteristics is high, and optimal content of growth factors is unknown, confusing the analysis of product efficacy. The evidence of clinical benefits of these products based on controlled clinical studies is lacking in most indications, although many case studies do support an objective benefit in soft and probably hard tissues healing. Improvements in the standardization and formulation of PG and PFG is a mandatory step forward for improving the reliability and the predictability of clinical outcomes of these interesting blood preparations.

To investigate the efficacy of fibrin sealant (FS) for reducing postoperative drainage in patients who underwent total thyroidectomy (TT) with bilateral central neck dissection (CND) for papillary thyroid cancer. Prospective randomized trial. Tertiary care institution. Seventy-eight patients with papillary thyroid cancer were enrolled and randomized to either the FS application group (FS+, 38 patients) or no FS application group (FS-, 40 patients). In both groups, postoperative drainage amounts were measured by a negative suction system until the criterion of drain removal was met. Drainage amounts as well as the time to drain removal, postoperative complications, and chemical profile assay of drain fluids between the 2 groups were performed. Drainage amounts at the initial 24 hours as well as total amounts of the FS+ group tended to be lower than those of the FS- group; however, they were not statistically different (at initial 24 hours, 64.3 ± 17.5 mL vs 73.0 ± 18.0 mL, P = .06; total amounts, 93.5 ± 30.7 mL vs 105.7 ± 31.2 mL, P = .05). The FS application did not shorten the time to drain removal even when different criteria for drain removal were applied (criteria of <20 mL/d or <30 mL/d). When chemistry profiles of collected drain fluids were analyzed in patient subgroups, the level of triglycerides in the FS+ group was significantly lower than in the FS- group. Fibrin sealant has no additional advantage in terms of drainage reduction and early discharge despite the additional medical cost.


Fibrin glue is used as a haemostatic agent or as a sealant. The aim of this study is to objectively evaluate the efficacy of the use of fibrin glue Quixil - a human surgical sealer - in tonsillectomy, for the reduction of post-operative inflammatory response. A prospective randomized single-blind study. The study was performed on 40 consecutive patients undergoing adenotonsillectomy (T&A). Patients were randomly assigned to one of two sub-groups: a study group and a control group. The tonsillar beds of patients in the study group were coated with fibrin glue (Quixil, OMRIX biopharmaceuticals) at the end of the operation; the patients in the control group were treated for hemostasis without the use of fibrin glue. Complete blood counts and circulating pro-inflammatory cytokines (assayed by specific immunoassay - ELISA) were assessed in samples drawn pre- and 16 h post-tonsillectomy. Forty patients (aged 5.8 ± 2.4 years) were consecutively enrolled; 45% (18) of the patients were treated with fibrin glue, 55% (22) were not. Compared to controls, Quixil-treated patients demonstrated a reduction in post-tonsillectomy circulating leukocytes (29.2% vs. 45.4%, p<0.05), neutrophiles (28.3% vs. 42.1%, p<0.05), IL-6 (+1% vs. +42%, p<0.05), and TNF-alpha (+8% vs. +26%, p<0.05). Intra-operative fibrin glue therapy is associated with decreased immediate inflammatory response following T&A. Further studies are warranted to assess long-term outcome. 1B. Copyright © 2012 Elsevier Ireland Ltd. All rights reserved.

Objectives: The aim of this study was to evaluate the extent and quality of new bone 6 months after sinus lift with biphasic micro- and macroporous calcium phosphate combined with fibrin sealant (MBCP-FS) and the 1-year implant success rate in the augmented site. Material and methods: MBCP-FS was applied to one sinus in 96 subjects requiring augmentation for delayed dental implant placement. In subjects who required bilateral lifts (N = 33), the MBCP-FS sinus was randomly selected; the contralateral sinus was grafted with autologous bone (mixed with Bio-Oss when harvested bone volume was insufficient. Panoramic views were taken periodically prior to and up to 18 months post-lift. Histomorphometric analysis was conducted on biopsies taken during implant placement 6 months after augmentation. Implant functionality and prosthesis success were assessed clinically 1 year after implant placement. Results: In MBCP-FS sinuses, 20.6 +/- 8.5% new, mainly lamellar bone was observed. Implants were placed as planned in 78/85 evaluable subjects (91.8%) 6 months after sinus lift. Graft heights remained stable 1 year after placement; 94.7% (142/150) of implants were functional. The amount and quality of new bone and implant success rates with MBCP-FS were similar to autologous bone graft (mixed with Bio-Oss in 30/31 evaluable subjects). MBCP-FS was safe and well-tolerated. Conclusions: MBCP-FS is safe and effective in sinus floor elevation for dental implant placement, supporting bone regeneration and with high 1-year implant success rates similar to autologous bone mixed with Bio-Oss. © 2011 John Wiley & Sons A/S.


Objectives: To evaluate the use of Hemostatic Fibrin Glue in parotidectomy without the use of surgical drains. Study design: Prospective cohort study of 10 patients undergoing parotidectomy. Surgery as a one day admission without the use of surgical drains was planned. The complication and duration of the hospital stay were obtained. Methods: Parotidectomy was undertaken by one surgeon. Prior to wound closure, the skin flap and wound bed were approximated using Tisseel tissue sealant. Data regarding the incidence of any complication and the duration of the hospital stay were obtained. Patients were followed to assess surgical outcome and document any complications. The mean follow-up period was 8. months (range 4-12. months). Results: There were no major surgical complications. Two patients had facial nerve weakness due to adherence of the tumour in the facial nerve, in there was which complete recovery after few months. All patients were discharged the next day. None of the patients felt that the discharge had been premature. Conclusions: Parotidectomy can be undertaken safely without the need for surgical drains, therefore, allowing the patients to leave the hospital on the first postoperative day. ©2010.

Even though the use of TachoComb does not decrease pain after tonsillectomy, it is safe and useful to reduce bleeding after tonsillectomy. Sealing the post-tonsillectomy wound would be expected to reduce pain and bleeding by decreasing the exposure of the traumatized tissue and sensory nerves. TachoComb is a powerful topical hemostatic agent. The objectives of this study were to evaluate the effect of TachoComb on reduction of pain and bleeding after tonsillectomy. A prospective randomized double-blind study was performed on 120 pediatric patients undergoing adenotonsillectomy. The patients were randomized into two groups: use/non-use of TachoComb. In the study group, each tonsillar bed was covered with a TachoComb strip at the end of operation. No hemostatic agents were used in the control group. After surgery, patients were monitored for pain, bleeding, oral intake, medication administration, activity, and complications using a 10-day diary. In all, 110 patients returned and filled in the diary. The use of TachoComb did not decrease pain, reduce the use of analgesic drugs or speed recovery to normal everyday life. Post-surgery bleeding was not experienced by any of the TachoComb patients, but occurred in five of the control patients. The result had borderline statistical significance (p < 0.1).


Dermal fat grafts are used to reconstruct facial contour defects but may undergo variable resorption. Application of autologous platelet adhesive may improve outcomes. The primary objective was to compare resorption of dermal fat grafts for parotidectomy defects, between patients receiving autologous platelet adhesive versus controls. This was a double-blinded prospective cohort at a tertiary care center. Volumetric analyses of dermal fat graft measured by MRI scans. Resorption was determined by comparing 1- and 6-month MRIs in each patient. Complications, Frey's Syndrome, and patient satisfaction were also assessed. Twelve patients completed the study. A significant reduction in graft resorption was seen in the treatment group (57% vs. 31%, p = .01). Three patients in the control group developed fat liquefaction. Patient perceived significant differences in scar and contour. Application of autologous platelet adhesives improved graft viability and patient satisfaction at 6 months.

Objectives: To determine whether patients receiving fibrin sealant placed in a single lateral osteotomy site during rhinoplasty will note substantial improvement in pain, bruising, swelling, and overall healing compared with the untreated side and to determine whether blinded observers detect a substantial difference in bruising and swelling on the basis of review of standard postoperative photographs. Methods: We conducted a prospective, randomized, single-blind, controlled trial of the use of fibrin sealant (human) (Evicel; Johnson & Johnson-Wound Management, Somerville, New Jersey) in 10 consecutive patients undergoing lateral osteotomy in rhinoplasty. Written consent was obtained from all participants. Each patient was randomized for the use of fibrin sealant on either the right or the left side with the contralateral side acting as the control. Patients were evaluated on postoperative days 1, 7, and 21 with standard photographic views and a patient questionnaire. The blinded observers consisted of 5 raters familiar with the outcomes and results of rhinoplastic surgery. The observers evaluated all photographs and completed a grading scale to define bruising and swelling on each side. Results: The mean patient age was 41 years (age range, 21-66 years). Half of the patients were women. The blinded observer Wilcoxon rank sum test revealed a statistically significant difference on postoperative day 1 for bruising (P<.03; Wilcoxon critical z value, 1.99) and swelling (P< .01; 2.41). Similar findings were discovered on post-operative day 7 for both bruising and swelling (P < .03). On postoperative day 21, bruising retained statistical significance (P < .05); however, swelling did not achieve statistical significance. Patient questionnaires were evaluated and significance was determined for the treated compared with the untreated side of the nose on postoperative days 1, 7, and 21. Categories included pain, bruising and swelling, and overall rate of healing. The Wilcoxon rank sum test revealed no significance for pain or overall rate of recovery (P > .06) on postoperative days 1, 7, or 21. However, bruising and swelling both achieved statistical significance. On postoperative day 1, both pain and swelling scales achieved a significance of P< .01 (Wilcoxon critical z value, 2.34). On postoperative day 7, bruising achieved significance at P < .005 (Wilcoxon critical z value, 2.63) and swelling achieved significance at P < .01 (2.45). Both bruising and swelling achieved equal significance on postoperative day 21 (P < .01; Wilcoxon critical z value, 2.57 and 2.45, respectively). Conclusions: Fibrin sealant applied to a lateral osteotomy site significantly reduced bruising and swelling per patient report on postoperative days 1, 7, and 21. Physician observation reported significant reduction in bruising on postoperative days 1,7, and 21 and reduction in swelling on postoperative days 1 and 7. The ease of application and versatility of fibrin sealant enable rapid healing after rhinoplasty and produce increased patient satisfaction.


Varying surgical techniques as well as a large selection of analgesics and other medications have been evaluated over the years in the hopes of reducing post-tonsillectomy pain. Several publications in recent years have
demonstrated the efficacy of fibrin glue in reducing post-tonsillectomy bleeding and pain. The objectives of this study were to evaluate the effect of fibrin glue on pain and bleeding after tonsillectomy. A prospective randomized double-blind study was performed on 168 consecutive patients undergoing tonsillectomy for obstructive sleep apnea and chronic tonsillitis. Patients were randomly assigned to the treatment protocol. In the study group, the tonsillar beds were coated with fibrin glue (Quixil, OMRIX biopharmaceuticals) at the end of the operation. Patients in the controlled group underwent tonsillectomy without the use of fibrin glue. The patients were then monitored for postoperative bleeding, and a patient-based pain assessment instrument was used to evaluate pain, ability to eat and analgesics consumption for 10 days after surgery. Ninety-six patients returned for postoperative follow up and filled in the questionnaire. As our medical center is the only hospital in the southern district of Israel and we hospitalize every person who presents with post-tonsillectomy bleeding, we can assume that any patient from either group who presented with post-tonsillectomy bleeding would be familiar to us. Analysis showed that no statistically significant differences relating to postoperative pain, bleeding, use of analgesics and postoperative eating resumption were detected between the patients treated with fibrin glue and controls. We cannot substantiate a significant beneficial effect of fibrin glue in post-tonsillectomy pain control, prevention of bleeding or facilitating eating and thus find no indication for the routine use of fibrin glue in tonsillectomy.


**PURPOSE:** Various sinus augmentation procedures, using bone substitutes, have been used to place dental implants in the atrophic posterior maxilla. The aim of this article is to evaluate the possibility of new bone formation in the maxillary sinus without a bone graft. **MATERIALS:** Ten patients without significant sinus pathosis were selected for this study. The bony window was prepared in the lateral wall using the ultrasonic piezoelectric bone surgery device (Surgynbone, Silfradent srl, Sofia, Italy). The sinus membrane was elevated superiorly and implants were placed simultaneously to maintain the space under the sinus membrane for new bone formation. As the methods of sealing the lateral access window of the sinus, patients were divided into 2 groups. Nonresorbable membrane was used to seal the lateral access window of the maxillary sinus after implant placement in 5 cases (group A). Replaceable bony window was used to seal the lateral wall of the sinus in another 5 cases (group B). Computed tomograms were taken immediately before and after surgery, at the uncovering of the implant, and after a 6 month healing period. A bone biopsy was taken on the previous bony window area to evaluate new bone formation. **RESULTS:** A total of 21 implants in lengths of 10 to 15 mm (mean, 13 mm) were placed, with an average residual bone height of 5 mm (range, 1-9 mm). All implants remained stable during the study period in clinical evaluations. New bone formation and new sinus floors were found in radiographic and histologic evaluations. **CONCLUSIONS:** The human study showed the capacity of new bone formation in the maxillary sinus with membrane elevation only and simultaneous implant placement beyond the original sinus floor. New bone formation without additional bone graft in the
maxillary sinus is revealed from the clinical, radiographic, and histologic results, but furthermore long-term studies are needed to confirm this.


Objective. Platelet-rich fibrin (PRF) belongs to a new generation of platelet concentrates, with simplified processing and without biochemical blood handling. The use of platelet gel to improve bone regeneration is a recent technique in implantology. However, the biologic properties and real effects of such products remain controversial. In this article, we therefore attempt to evaluate the potential of PRF in combination with freeze-dried bone allograft (FDBA) (Phoenix; TBF, France) to enhance bone regeneration in sinus floor elevation. Study design. Nine sinus floor augmentations were performed. In 6 sites, PRF was added to FDBA particles (test group), and in 3 sites FDBA without PRF was used (control group). Four months later for the test group and 8 months later for the control group, bone specimens were harvested from the augmented region during the implant insertion procedure. These specimens were treated for histologic analysis. Results. Histologic evaluations reveal the presence of residual bone surrounded by newly formed bone and connective tissue. After 4 months of healing time, histologic maturation of the test group appears to be identical to that of the control group after a period of 8 months. Moreover, the quantities of newly formed bone were equivalent between the 2 protocols. Conclusions. Sinus floor augmentation with FDBA and PRF leads to a reduction of healing time prior to implant placement. From a histologic point of view, this healing time could be reduced to 4 months, but large-scale studies are still necessary to validate these first results. © 2006 Mosby, Inc. All rights reserved.


Background: Tisseel (Baxter Corp. Ontario, Canada) is a fibrin-based tissue glue that has been widely used to reduce wound drainage, achieve hemostasis, and decrease surgical complications. To date, Tisseel has not been evaluated in a randomized prospective trial for use in parotid surgery. Objectives: To determine whether the use of Tisseel in parotidectomy decreases postoperative wound drainage, the duration of percutaneous drainage, the length of hospital stay, and the frequency of complications. Methods: Sixty consecutive parotidectomy patients were randomized into two groups: a group treated with 2 cc of Tisseel prior to wound closure and a control group. Postoperative wound drainage was measured for all patients by blinded hospital staff. The duration of percutaneous drainage, duration of hospital stay, and incidence of complications at the 3-week follow-up were assessed. Results: A statistically significant difference in total drainage volume (p < .02) and frequency of postoperative seroma (p < .05) was demonstrated between
patients treated with Tisseel prior to wound closure and the control group. Conclusion: The use of Tisseel in parotidectomy patients prior to wound closure significantly decreases total drainage volume and the frequency of postoperative seroma.


Objectives: To report the modifications and complications of the Furlow palatoplasty for two-stage closure of the palate. Patients and methods: Prospective study of a consecutive series of 45 primary closures of the soft palate portion of clefts extending into the hard palate; mean (S.D.) age at repair 12 (2) months; median follow-up 4 years 4 months (range 2 months to 9 years). The hard palatal part of the cleft was closed in 18 patients at the mean age of 3 years 11 months. Results: The main modifications that we made were the use of quilting sutures, lateral V-Y closures, and fibrin glue application, and the omission of lateral releasing incisions. Patients stayed in hospital for a median of 4 days (range 3-8 days). Two patients had postoperative partial obstruction of the airway and were given steroids. In six patients, a smaller portion of the oral layer of the wound broke down; it healed by secondary intention in five, but resulted in partial dehiscence in one. There were no oronasal fistulas in the 18 patients who had delayed closure of the hard palate part of the cleft. Secondary pharyngoplasty was not necessary in any patient. Conclusion: Furlow's technique has been modified for use in the two-stage closure of complete cleft palates (with or without cleft lip or alveolus) with an acceptable rate of complications. © 2005 The British Association of Oral and Maxillofacial Surgeons. Published by Elsevier Ltd. All rights reserved.


OBJECTIVE: To evaluate the efficacy and safety of local acting hemostatic agents in patients who are undergoing dental extraction(s) and are taking oral anticoagulants. DATA SOURCES: A search of MEDLINE (1966-July 2006), International Pharmaceutical Abstracts (1970-July 2006), and EMBASE (1966-July 2006) was conducted using the key terms anticoagulation, warfarin, hemostatic mouthwashes, epsilon aminocaproic acid, tranexamic acid, dental extraction, and oral surgery. Bibliographies of relevant papers were reviewed for additional references. STUDY SELECTION AND DATA EXTRACTION: English-language literature, including abstracts, clinical trials, and review articles, were reviewed. Clinical trials were included if they evaluated hemostatic mouthwashes in patients receiving continued anticoagulation and undergoing dental extractions or various oral surgeries including dental extraction. Eight clinical trials met study selection criteria for evaluation of hemostatic mouthwashes in anticoagulated patients undergoing dental extraction. Eight studies evaluated tranexamic acid; one assessed epsilon aminocaproic acid. All studies were reviewed for efficacy and safety of hemostatic mouthwashes and intensity of continued anticoagulation therapy.
DATA SYNTHESIS: Eight small studies enrolled populations that varied in the indications for oral anticoagulation (OA), target INR ranges, and oral surgeries performed. Patients receiving uninterrupted OA and using hemostatic mouthwashes had no greater and, in some cases, lesser bleeding incidence compared with various other treatment groups (including interrupted OA, uninterrupted OA, autologous fibrin glue with uninterrupted OA, and reduced OA with heparin bridge). No severe adverse effects were reported. No studies assessed the risk of thromboembolism between the different treatment strategies. CONCLUSIONS: Findings in recent studies indicate that dental extractions in anticoagulated patients can be performed without temporary discontinuation of oral anticoagulant therapy with the use of hemostatic mouthwashes to control localized bleeding. This practice should be more widely adopted due to minimized bleeding and thromboembolic risks.


Background: Fibrin glue has been used in diverse areas of plastic surgery. To the authors’ knowledge, no clinical controlled trial studies have reported its use for open rhinoplasty. Methods: A prospective, randomized, masked clinical trial was designed to demonstrate that aerosolized bovine-prepared fibrin glue used in open rhinoplasty controls skin fixation (flap movement), edema, hematomas, ecchymosis, bleeding, and cosmetic results 1 and 12 months postoperatively. The results were reviewed by two blinded plastic surgeons who assessed postoperative photographs using the Strasser score. Other items such as columella scar, pain, surgery/recovery time, and patient satisfaction also were evaluated. Results: A computer system was used to randomize 22 consecutive open primary rhinoplasties. Cosmetic analysis did not differ significantly between the group redraped with fibrin glue and the control group. Patient satisfaction was the only outcome that significantly favored the active group. None of the other items or adverse events significantly differed between the two groups, including operative time and pain. Conclusions: Fibrin glue is believed to reduce bleeding and to improve the adherence of tissues. The only statistical difference in this study favored the patient satisfaction cosmetic score of the group that received fibrin glue. © 2006 Springer Science+Business Media, Inc.


A major complication in 30% to 75% of cases of surgical treatment of alveolar cleft is resorption of the bone graft. A treatment alternative is the application of fibrin glue, which has the capacity to favor the integration of the graft. The main objective of the study was to evaluate if the use of the fibrin glue reduces bone resorption when it is applied locally. The authors designed a randomized clinical trial. Patients were divided into two groups: group 1, fibrin glue; and
group 2, control. Pre- and postoperative graft volume, bone density, bone quality (Lekholm and Zarf, and Norton and Gamble classifications), and postoperative complications were evaluated. The follow-up for all patients was 3 months after discharge. Twenty-seven patients were surgically treated, 13 in group 1 and 14 in group 2. Group 1 had increased graft volume compared with group 2 (64.32 cm$^3$ v 21.70 cm$^3$; P < 0.0001). Bone density was higher in group 1 than in group 2 (396.57 v 245.68; P > 0.076). Bone quality was type 1, 2 and 3 and 4 in group 1. Resorption in group 2 was 62.26%; in group 1, it was 29.72% (P > 0.081). The observed complications were infection and dehiscence of sutures (P > 0.537). The authors conclude that the fibrin glue significantly diminishes bone resorption, allowing improved graft integration and quality.


This randomized, blinded, controlled study examines the effects of fibrin sealant (Tisseel, Laboratoire de production Baxter AG, Vienna, Austria) on wound drainage following thyroidectomy. Fifty-six consecutive patients were enrolled in the study. Patients were randomized into Tisseel and non-Tisseel treatment groups. Wound drain output was tallied in 8-hour increments by observers blinded to the treatment groups. Fifty-six patients completed the study. Significant decreases in wound drainage were found in the first 8 hours in the Tisseel group. Eight hours postoperatively, wound output in the Tisseel group was reduced by 44% compared with the non-Tisseel group. A significant decrease in the total drainage over the 64-hour time period of 43% was noted between the treatment and control groups. Post-thyroidectomy wound drainage was reduced and trended to earlier drain removal. No significant changes in the length of hospital stay were noted, nor were postoperative complications encountered in either treatment group. Fibrin sealants offer a unique opportunity to safely decrease post-thyroidectomy wound drainage. This investigation furthers the evidence that fibrin sealants could safely enable the implementation of drain-free thyroidectomies.


Objectives: Endonasal operations such as septoplasty, rhinoplasty, nasal septal reconstruction and conchotomy, as well as endoscopic sinus surgery, especially when combined with turbinectomy and/or submucous resection of the septum, may produce bleeding and postoperative hematoma requiring postoperative hemostatic measures. Since nasal packing may cause pain, rhinorrhea and inconvenience, a more effective and less uncomfortable hemostatic technique is needed. Objectives: To compare the hemostatic efficacy of the second-generation surgical sealant (QuixilTM in Europe and Israel, CrossealTM in the USA) to that of nasal packing in endonasal surgery. Methods: We conducted a prospective randomized trial that included 494 patients (selected from 529 using exclusion and inclusion criteria and
completed follow-up) undergoing the above-mentioned endonasal procedures. Patients were assigned to one of three surgical groups: septoplasty + conchotomy + nasal packing or fibrin sealant (Group 1); ESS + nasal packing or fibrin sealant (Group 2); and ESS + septoplasty + conchotomy + nasal packing or fibrin sealant (Group 3). The hemostatic effects were evaluated objectively in the clinic by anterior rhinoscopy and endoscopy and assessed subjectively by the patients at follow-up visits.

Results: Postoperative hemorrhage occurred in 22.9-25% of patients with nasal packing vs. 3.12-4.65% in the fibrin sealant groups (late hemorrhage only). Drainage and ventilation of the paranasal sinuses, which are impaired in all cases of packing, remained normal in the fibrin sealant group. There were no allergic reactions to the sealant. Conclusions: Our results show that fibrin sealant by aerosol spray in endonasal surgery is more effective and convenient than nasal packing. It requires no special treatment, e.g., antibiotics, which are usually used if nasal packing is involved.


Background. Tissue adhesives offer the attractive prospect of sutureless surgery and provide a mechanism for repairing potentially difficult surgical wounds. We examined the ability of fibrin glue - instead of sutures - to close conjunctival wounds at the end of different ophthalmic surgeries. Methods and patients. Between 2002 and 2003 the fibrin glue Beriplast was used in our department to close the conjunctival wound in 100 eye muscle surgeries, 10 scleral buckling procedures in retinal detachment, and 20 pars plana vitrectomies. Results. No patient showed postoperative adverse or allergic reactions, bacterial infections, inflammation, or delayed healing. The healing process of the conjunctiva takes a similar time course as in suture closure, but without disturbing suture ends and knots. In children with extensive Tenon's fascia, adaptation of the conjunctiva is safer using sutures. The necessary time using fibrin glue is reduced to one-fourth of the usual 4-8 min necessary for suturing the conjunctiva. The costs for fibrin glue are the same as for Vicryl 9/0, i.e., approximately 18-20 Euros per patient. Conclusions. Fibrin glue for closing conjunctival wounds results in good adaptation, is time saving, effective, and not more expensive than a suture with a high-end needle. Especially the thin atrophic conjunctiva in adults will tear using sutures in contrast to the very fast and effective adaptation with fibrin glue. Application of fibrin glue is limited in children with extensive Tenon's fascia: in these patients a suture is superior for good adaptation of the conjunctiva.


Purpose: The aim of this prospective study was to compare the effectiveness of a 4.8% tranexamic acid mouthwash versus an autologous fibrin glue preparation to control hemostasis in patients therapeutically anticoagulated
with warfarin who required dental extractions without interruption of their treatment. Patients and Methods: The 49 patients who underwent 152 dental extractions were randomly allocated to 2 groups: Group A were required to rinse with 10 mL of a 4.8% tranexamic acid solution 4 times a day for 7 days postoperatively. Group B received autologous fibrin glue intraoperatively. The international normalized ratio was measured on the day of the procedure. All procedures were performed on an ambulatory basis by the same surgeon. Results: Of the 49 patients, 2 presented with postoperative bleeding (4%). Both patients were from the autologous fibrin glue group and were found to have grossly elevated international normalized ratios on the day of the bleeding that was unaccounted for. Conclusions: This study supports the consensus that dental extractions can be performed without modification of oral anticoagulant treatment. Local hemostasis with an absorbable oxidized cellulose mesh, tranexamic acid, and sutures is the more cost efficient of the 2 methods compared; however, autologous fibrin glue has an important role in patients unable to use a mouthwash effectively. © 2003 American Association of Oral and Maxillofacial Surgeons.


Objective: To compare the efficacy of fibrin glue and N-butyl-2-cyanoacrylate in corneal perforations. Design: Randomized, controlled clinical trial. Participants: Forty-one patients (41 eyes) with corneal perforations up to 3 mm in diameter with a positive Seidel’s test were randomly assigned to two groups (1 and 2). Intervention: Group 1 comprised 19 eyes treated with fibrin glue, and group 2 comprised 22 eyes treated with N-butyl-2-cyanoacrylate. Main Outcome Measures: Number of eyes with successful healing, time required for healing, status of corneal vascularization, and complications were compared in the two groups. Power calculation was performed at alpha = 0.05. Results: Fifteen (79%) eyes had successful healing of corneal perforation in group 1, compared with 19 (86%) eyes in group 2 (P > 0.05) at 3 months’ follow-up. The power to detect a difference between the two groups was 10%. Corneal perforation healed within 6 weeks in 12 (63%) eyes in group 1 and 7 (31.8%) eyes in group 2 (P < 0.05). Reapplication of glue was required in six (31.5%) eyes in group 1 and seven (31.4%) eyes in group 2 during the first 3 months of follow-up. The mean number of applications per eye was 1.37 in group 1 and 1.36 in group 2. An increase in deep corneal vascularization was observed in 2 (10.5%) eyes in group 1 and 10 (45.5%) eyes in group 2 (P < 0.05). Giant papillary conjunctivitis occurred in one (5%) eye in group 1 and eight (36.4%) eyes in group 2 (P < 0.05). Conclusions: Fibrin glue and cyanoacrylate tissue adhesive are both effective in the closure of corneal perforations up to 3 mm in diameter. Fibrin glue provides faster healing and induces significantly less corneal vascularization, but it requires a significantly longer time for adhesive plug formation. © 2003 by the American Academy of Ophthalmology.

Tachibana, M., Kinugasa, S., Yoshimura, H., Dhar, D. K., Ueda, S., Fujii, T., Kohno, H., & Nagasue, N. 2003. Does fibrin glue reduce lymph leakage (pleural...

Fibrin glue has been shown to be effective in improving postoperative chylothorax following various thoracic procedures and in reducing lymphorrhea after axillary dissection. It is unknown, however, whether fibrin glue is effective in reducing lymph leakage (pleural effusion) after esophagectomy. A series of 43 consecutive patients with thoracic esophageal cancer who underwent extended esophagectomy were prospectively randomized to two groups: group A (n = 21), in whom 3 ml of fibrin glue was applied to the dissected mediastinum; and group B (n = 22), in whom fibrin glue was not applied. The time of drain removal and the volume of the thoracic drainage were compared. All data were expressed as the mean +/- standard deviation. There were no significant differences in the clinicopathologic characteristics between the two groups. None of the patients developed chylothorax or died during their hospital stay. The daily volume from the thoracic drain (457 +/- 273 ml) was significantly (p < 0.05) larger on postoperative day (POD) 1 in group A than in group B (298 +/- 158 ml) and tended to be larger (p < 0.10) on PODs 4 and 6 in group A than in group B. The cumulative drainage volume was significantly (p < 0.05) larger on PODs 4 to 6 and POD 9, and it tended to be larger (p < 0.10) on PODs 1, 3, 7, 8, 10, and 11 in group A than in group B, suggesting that the cumulative drainage volume in group A was consistently larger than that in group B. The cumulative numbers of patients with a drain remaining in place were not significantly different for the two groups (p = 0.4683). Three patients in group A, however, had prolonged insertion (> 20 days) of the chest tube. There were no significant differences in the incidence of postoperative chest-related complications. No patients in group A developed viral infectious disease during the long-term follow-up. Application of fibrin glue to the dissected mediastinum seems to induce postoperative lymph leakage and thus be responsible for prolonged chest tube insertion in some patients. Hence the use of fibrin glue cannot be recommended for reducing lymph leakage after esophagectomy.


Preservation of the alveolar ridge following tooth extraction is desirable since it facilitates placement of endosseous implants and may improve the adverse esthetics often associated with fixed partial dentures. The purpose of this study was to compare the clinical effectiveness of bovine porous bone mineral (BPBM) used as a graft material combined with either guided tissue regeneration (GTR) or with the autologous fibrinogen/fibronectin system (AFFS) in preserving alveolar ridges following tooth extraction. Twenty-six patients who required extraction of two or more anterior or bicuspid teeth participated in a split-mouth design study. Following tooth extraction and elevation of a buccal full thickness flap, sockets were filled with bovine porous bone mineral which was then covered with either a collagen membrane or mixed and covered with an AFFS system. An acrylic stent served as a
reference point for measurements. Primary flap closure was achieved in all surgical sites, and reentry surgery was performed at 6 months. Reentry surgery showed that BPBM/GTR sites presented with [1] significantly more internal socket bone fill (6.04 +/- 0.21 mm vs. 4.98 +/- 0.26 mm), [2] less, although not statistically significant, resorption of alveolar bone height (0.23 +/- 0.28 mm vs. 0.3 +/- 0.21 mm), and [3] significantly less horizontal resorption of the alveolar bony ridge as compared to BPBM/AFFS (1.06 +/- 0.28 mm vs. 2.60 +/- 0.25 mm). This study suggests that treatment of extraction sockets with a combination of bovine porous bone mineral and guided tissue regeneration is of slightly more benefit in preserving alveolar ridge dimensions following tooth extraction than treatment with a combination of bovine porous bone mineral and the autologous fibrinogen/fibronectin system.


Introduction: Among the complications of septoplasty, postoperative septal bleeding and hematoma are among the most frequent. In order to avoid such problems, most surgeons still use nasal packing and/or splints that make the postoperative period extremely unpleasant. The purpose of this paper is to evaluate the efficacy and safety of fibrin glue in septoplasties for prophylaxis of these complications. Study design: Clinical prospective randomized. Material and method: We observed 20 patients who underwent septoplasty from January to May 2002, at the Real Instituto de Otorrino e Fono, in whom we used fibrin glue, in order to seal the septal flaps. Results: No case of septal bleeding or hematoma was noticed and no other complications occurred that could have been associated with the fibrin glue. Conclusions: Fibrin glue proved to be efficacious in preventing such complications and well tolerated by nasal cavity tissues. Besides, it assured a much more comfortable postoperative period than what is seen with nasal packing and splint.


Operations like septoplasty, rhinoplasty, nasal septal reconstruction and conchotomy may produce bleeding and postoperative hematoma. Twohundredfour patients undergoing septoplasty and conchotomy operations were entered into a prospective study. Patients were randomly assigned to one of three treatment groups: Group I, septoplasty + conchotomy + nasal packing; Group II, septoplasty + conchotomy + fibrin glue; Group III, septoplasty + conchotomy + fibrin glue + transseptal suturing. To stop bleeding, we used
the second generation surgical fibrin sealant Quixil and compared it with nasal packing. To increase protection against possible intraseptal hematoma we tried transseptal suturing at the end of a standard septoplasty operation. Our results show that the usage of the Quixil fibrin glue by aerosol spraying in endonasal operations is more effective and convenient than the usage of nasal packing. This combination of fibrin glue and the transseptal suturing substitutes the role of nasal packing in preventing postoperative intranasal hematoma. However, the transseptal suturing combined with the glue is not justified for the patients as no statistical difference was observed between Groups II and III in terms of occurrence of postoperative complications.


The surgical repair of large calvarial defects is still a challenge for craniofacial surgeons. Since the discovery of bone growth factors, numerous studies have confirmed the interest of osteoinduction for bone repair. We summarize the findings of experimental and clinical trials carried out with composite bone substitutes. The triple mixture of TGF-beta<sub>1</sub>, fibrin glue, and natural coral has proven effective in repairing rabbit skull defects. The same preparation was also efficient for a cranioplasty in two of three patients, age being a limiting factor. The adjunction of bone morphogenetic protein to autologous bone marrow was shown to be a potentiating factor in a rat cranioplasty model, but the combination of fibrin glue and bone marrow on a natural coral carrier was unable to achieve bone repair in children aged 6 years. Although the series were limited, stability and asepsis were important factors in promoting bony ingrowth. Cranioplasties with osteogenic biomaterials may be a good option, but the most adequate dose of growth factor should be determined.


The notable morbidity of tonsillectomy includes considerable postoperative pain and a rate of postoperative bleeding that have remained largely uninfluenced by modern surgical techniques or medication. Fibrin glue is known to have a hemostatic effect in some settings, and there is research suggesting it may also reduce postoperative pain. The objectives of this study were to evaluate the effect of fibrin glue on pain and bleeding after tonsillectomy. A prospective randomized double-blind study was performed on 50 consecutive adult patients undergoing tonsillectomy for chronic tonsillitis. After removal of both tonsils the tonsillar fossa randomly assigned to the treatment protocol was coated with fibrin glue. The other side was left unaltered. The patient was then monitored for postoperative bleeding and wound healing, and a patient-based pain assessment instrument was used to evaluate symptoms every 8 hours for 10 days after surgery. Detailed evaluation of the pain scores allowed the authors to create a pain profile for what the typical patient experiences over the first 10 postoperative days, as well as during the course of a single day.
The pain remains relatively constant for the first 7 days and begins to decrease only on the eighth postoperative day. During a single day there is increased pain in the morning compared with noon and evening. However, no statistically significant difference was detected in postoperative pain, bleeding, or healing between the wounds treated with fibrin glue and controls. The patient-based pain evaluation data should aid the physician in preoperative outcome counselling and targeted prescription of pain medication. However, contrary to previous indications, the authors cannot substantiate a significant beneficial effect of fibrin glue in postoperative pain control. Furthermore, we did not find its action as a hemostatic agent clinically applicable in this setting, and thus find no indication for the routine use of fibrin glue in tonsillectomy.


Endoscopic sinus surgery may be complicated by bleeding, formation of synechia, and infection. This study investigated the application of autologous fibrin tissue adhesive during endoscopic sinus surgery in an attempt to avoid packing, to decrease complications, and to improve healing. Fibrin tissue adhesive from pooled human blood is a hemostatic and bacteriostatic agent. Autologous fibrin tissue adhesive avoids the potential infectious and immunologic risks of the pooled blood product. Twelve patients undergoing bilateral endoscopic sinus surgery participated in the study. Phlebotomy and preparation of the adhesive were performed during the procedure. Fibrin tissue adhesive was applied to only one side, with the contralateral side used as a control. Bacitracin ointment was applied to the adhesive-treated side, and packing coated with bacitracin was placed on the contralateral side. Patients were observed for a minimum of 3 months, and results were documented with photographic and video recordings. A uniformly high degree of patient satisfaction was achieved because of the elimination of packing and a sensation of increased nasal airway patency on the fibrin-treated side. Fibrin tissue adhesive provided hemostasis, decreased crusting, accelerated mucosal healing, and diminished synechia. Autologous fibrin tissue adhesive is beneficial in endoscopic sinus surgery, and its application should be considered, especially when the risk of hemorrhage or synechia is increased.


Displacement of bone graft particles during their placement, neck flap closure, and insertion of the freeze-dried mandibular crib housing the graft to the glenoid fossa is a commonly encountered problem during major mandibular reconstruction with autogenous particulate cancellous bone and marrow. Autologous fibrin adhesive proved to be a solution as demonstrated in a series of 33 cases. In addition to adhesive and hemostatic properties, it helped the remodeling process begin about 50% earlier by providing the
substratum for migration of mesenchymal cells, accelerating revascularization and migration of fibroblasts, stimulating the growth of both fibroblasts and osteoblasts, and slowing the multiplication of microorganisms. Bony incorporation and remodeling were detected radiographically at the fourth postoperative week compared with the eighth week in bone grafts without autologous fibrin adhesive.


A prospective randomized study was conducted on 100 patients operated upon for oesophageal diseases to evaluate the usefulness of fibrin glue in reinforcing oesophageal anastomoses. The anastomoses were located in the neck, the chest or the lower mediastinum. The operative mortality rate, the number and severity of fistulae and the incidence of anastomotic stenosis were studied. This series was insufficient to demonstrate that fibrin glue was effective in this type of surgery.