Should Physician Work Hours Comply With Aviation Industry Standards?

Cost and Workforce Implications of Subjecting All Physicians to Aviation Industry Work-Hour Restrictions.
Payette M, Chatterjee A, Weeks WB:
Am J Surg; 2009; 197 (June): 820-825

Imposing aviation industry duty-hour restrictions to physicians in the U.S. health care system would be prohibitively costly.

**Objective:** To determine the potential costs and implications of applying aviation industry duty-hour restrictions to the entire practicing physician workforce.

**Design:** Comparison of aviation industry safety-mandated work-hour restrictions to resident and attending physician work hours.

**Methods:** Aviation work-hour, safety-mandated restrictions were applied to both resident and practicing physicians. This was done to try to understand the cost and workforce implications of such restrictions on the health care community. Pilots must have a minimum rest period of 10 hours immediately before duty and have the same total duty-hour restrictions for any calendar quarter, any 2 consecutive calendar quarters, or any calendar year. Pilots' maximum duty hours are 500 in any calendar quarter compared to 960 for residents under Accreditation Council for Graduate Medical Education (ACGME) mandates. In any 2 calendar quarters, pilots' maximum duty hours are 800 compared to 1920 hours for house staff physicians. Annual maximum pilot duty hours are 1400 compared to 3840 hours for house staff.

**Results:** Residents have maximum duty hour periods that are much larger than those in aviation. Residents make up only about 13% of all actively practicing physicians. By comparing aviation, physician house staff, ACGME-mandated, and practicing physician "average" work hours, the authors came up with very interesting numbers. Restricting resident physician hours to aviation guidelines would create a deficit of 166,835 residents at a cost of about $6.45 billion annually. To make up for the work-hour deficit created by universal adoption of aviation standards to all physicians would require 459,198 more physicians at a cost of about $80.4 billion annually. Implementing a physician mandatory retirement age of 65 years, as is done in aviation, would cost an additional $10.5 billion a year. Assuming that ACGME-mandated resident work-hour restrictions eliminate all deaths due to medical errors, which has been shown not to be the case, aviation-type work-hour restrictions would put the cost per life saved between $1,035,227 and $2,070,455.

**Conclusions:** Applying aviation industry duty-hour restrictions to the U.S. health care system would be prohibitively costly.

**Reviewer's Comments:** ACGME duty-hour limitations for house staff were implemented in July 2003. To date, there is little or no evidence that imposition of these standards has improved patient safety or mortality rates. This paper has a great discussion and a ton of data. It's a really eye-opening read. (Reviewer-Sterling R. Schow, DMD).

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Is Enucleation Appropriate in Managing Ameloblastoma?

Is There a Role for Enucleation in the Management of Ameloblastoma?

Pogrel M, Montes D:


There is no place for enucleation alone in the treatment of intraosseous ameloblastomas.

Objective: To determine if enucleation is an appropriate management protocol for ameloblastomas.

Design: Literature review.

Methods: Various search venues were utilized for the literature search. Articles met inclusion criteria if they satisfied the following parameters: controlled clinical trials, longitudinal cohort studies, randomized trials, case theories, and case controls. A total of 101 English language papers were identified by the search, and 58 papers met all of the inclusion criteria. None of the papers were randomized, controlled trials.

Results: The histologic type of ameloblastoma does not seem to be a determinant in either treatment or prognosis. They are most commonly found in the mandible, with the highest incidence between the third and fifth decade, and the ratio between males and females appears equal. Multicystic and solid tumors are more aggressive and have a higher recurrence rate, estimated at 60% to 80% if treated with enucleation alone. The highest incidence of recurrence is between years 2 to 5. Histologic samplings of resected tumors have shown cells 8 mm from the tumor margin, so a 1-cm surgical margin is recommended. Tumors that perforate the cortical bone require supraperiosteal dissections. Enucleation of unicystic ameloblastomas has a recurrence rate similar to that of solid or multicystic ameloblastomas. Due to the perception that unicystic lesions are inherently less aggressive, enucleation followed by curettage or the application of liquid nitrogen or Carnoy's solution may be appropriate, but long-term follow-up studies are lacking. The peripheral ameloblastoma is histologically identical but occurs in the soft tissues only and responds well to simple excision.

Conclusions: Enucleation by itself has no place in the management of intraosseous ameloblastomas. Multicystic and solid ameloblastomas have a very high rate of recurrence when treated by enucleation alone. Therefore, must be treated with surgical resection with a margin of 1 cm. unicystic tumors treated by enucleation alone have a very high rate of recurrence; therefore, they must be treated with enucleation followed by physicochemical treatments. Peripheral ameloblastomas appear to respond well to local excision.

Reviewer’s Comments: A very well-done analysis with conclusions consistent with previous reviews; enucleation of an ameloblastoma is associated with a very high rate of recurrence. I have had success with enucleation followed by curettage and Carnoy's solution of the unicystic ameloblastoma. (Reviewer-David M. Grogan, DMD).

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Beware of Hemorrhage in Orbital Fracture Patients on Heparin

Orbital Hemorrhage and Compressive Optic Neuropathy in Patients With Midfacial Fractures Receiving Low-Molecular Weight Heparin Therapy.
Jamal BT, Diecidue RJ, et al:
J Oral Maxillofac Surg; 2009; 67 (July): 1416-1419

Objective: To report on 2 cases of orbital hemorrhage in patients with orbital fractures who were receiving low-molecular weight heparin (LMWH) for deep venous thrombosis prophylaxis.

Design: A case study and review of incidents of orbital fractures and retrobulbar hemorrhage.

Participants: 2 patients received orbital fractures and were placed on LMWH to prevent deep venous thrombosis. Both patients had the complication of emesis, which may have increased blood pressure. Both patients developed significant orbital hemorrhage requiring cantholysis and lateral canthotomy. The hemorrhage had caused significant visual disturbances, which resolved after prompt surgical release of orbital pressure. Careful observation must be performed on patients with orbital fractures who are placed on LMWH for the prevention of deep venous thrombosis.

Conclusions: Careful observation of orbital fracture patients receiving LMWH is indicated, and ophthalmology intervention should be instituted at the first sign of visual impairment.

Reviewer’s Comments: This case review shows the dire consequences of hemorrhage in patients who have orbital fractures who are placed on LMWH for the prevention of deep venous thrombosis. (Reviewer-Edwin D. Joy, Jr, DDS).

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How to Identify and Manage Problem Residents

The Nature of General Surgery Resident Performance Problems.
Williams RG, Roberts NK, et al:
Surgery; 2009; 145 (June): 651-658

The most common performance problems with surgery residents are relationships with health care workers, insufficient knowledge, and poor communication skills.

Objective: To identify residents who had serious recurring academic, clinical, or professional behavior problems and to describe their nature.

Design: Retrospective record review of general surgery categorical residents in one residency program over a 30-year period.

Participants: 3 raters reviewed the records of 78 general surgery residents.

Methods: 5 primary data sources were reviewed for each resident over the course of their 5-year program. These included global numeric ratings and narrative evaluations for each rotation, memoranda of record for advisor meetings, records and minutes of end-of-year decision meetings about resident performance and progress, and any other input contained in the records. Three raters with extensive experience in evaluating student and resident performances reviewed, described, and classified each resident. Each case was evaluated in terms of the seriousness of the resident's problems, interventions tried, and the outcomes of the interventions. USMLE/NBME test records, ABSITE performance, and results of the Qualifying and Certifying Examinations of the American Board of Surgery were also noted.

Results: 17 of the 78 residents (22%) were identified as having performance problems. Four residents had difficulty with academic performance, 5 had clinical performance problems, and 8 had primary professional behavior difficulties. Almost all residents with performance problems had difficulties in multiple areas. Relationships with other health care workers was the difficulty identified most often, followed by insufficient knowledge and poor communication skills. In 82% of cases, performance problems were identified in the first year of the residency. Two of the 17 residents did not finish their residency, 2 had to spend an extra year in the program, and 2 did not have a license to practice medicine; 41% of the 17 problem residents never completed board certification. Fifteen of the 17 residents continued to have significant, unresolved performance problems throughout their residency. Performance problems, for the most part, did not resolve when unaddressed, and methods used to address the issues did not lead to problem resolution. Unfortunately, even when it appeared there would be improvement after counseling, the effect was short lived.

Conclusions: Residents with problem performance are usually identified early in their program, most within the first year. Problems tend to persist throughout such a resident's entire program, and, unfortunately, most attempts at intervention do not lead to problem resolution.

Reviewer's Comments: Any individual who has directed a residency program can relate to this well-written paper. Programs should direct their efforts toward recognizing, documenting, and addressing resident problems early. (Reviewer-Sterling R. Schow, DMD).

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TMJ Osteoarthritis--Is Hyaluronic Acid the Cure?

**Temporomandibular Joint Osteoarthritis: An Open Label Trial of 76 Patients Treated With Arthrocentesis Plus Hyaluronic Acid Injections.**


Serial arthrocentesis followed by injections of hyaluronic acid appears to be a useful treatment modality for osteoarthritis of the TMJ.

**Objective:** To determine the efficacy of arthrocentesis in combination with hyaluronic acid injections for the treatment of osteoarthritis of the TMJ.

**Design:** Retrospective clinical investigation.

**Participants:** 76 patients.

**Methods:** All patients presented with a diagnosis of osteoarthritis (group IIIb) according to the Research Diagnostic Criteria for Temporomandibular Disorders. All patients underwent a cycle of 5 arthrocentesis procedures followed by an injection of 1 mL of hyaluronic acid. Arthrocentesis was performed in a routine fashion, and the hyaluronic acid was a low-molecular weight fraction of avian sodium hyaluronate. The interventions were performed on a weekly basis. Patients were then followed up according to the following schedule: 1 week, 3 months, and 6 months. The following parameters were recorded at baseline and at all follow-up appointments: pain at rest and during phonation and mastication, and maximum assisted and unassisted mouth opening.

**Results:** Pain values associated with phonation, mastication, and at rest all improved over the study period. The mean minimum values for pain at rest were the slowest to show signs of improvement. The mean value for unassisted mouth opening increased from 37.9 to 42.1 mm at completion of the study. The maximum assisted mouth opening values also increased over the study period from 41.9 to 45.2 mm.

**Conclusions:** The use of serial hyaluronic acid injections following arthrocentesis was associated with functional improvements over the study period. Further long-term investigations with a larger patient population will be necessary to determine the efficacy of this procedure.

**Reviewer's Comments:** This is a very well-done clinical trial. Now prospective controlled investigations will be necessary to determine the efficacy of this combination. (Reviewer-David M. Grogan, DMD).

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Women Reluctant to Report Violence as Cause of Facial Trauma

A Comparison of 2 Protocols to Detect Intimate Partner Violence.


Many female patients are fearful and reluctant to report partner violence as the cause of significant facial trauma.

Objective: To compare 2 protocols to identify women who self-report intimate partner violence facial injuries.

Design: A comparison of 2 protocols for identifying patients who are reluctant to report intimate partner violence as the cause of trauma.

Participants/Methods: 286 female patients entering the emergency department at Massachusetts General Hospital were divided into 2 groups. The first group was screened using a diagnostic protocol that included the site of injury and answers to a question about fear and previous partner injury. The second group was screened using a triage nurse and a questionnaire in order to identify patients who were victims of intimate partner violence. The findings of these 2 groups were compared with patients who self-reported intimate partner violence, and the 2 groups were compared for the number of patients identified by the different methods.

Results: There was a 38-fold increased likelihood of reporting intimate partner violence when the diagnostic protocol was used compared with the standard procedure that included a triage nurse. The diagnostic protocol included an oral interview with the practitioner asking questions about prior violence and fear of her partner on the part of the patient.

Conclusions: A protocol that involved the location of the injury and the height of fear of the patient of her current intimate partner was far more accurate in identifying intimate partner violence than a questionnaire completed by a triage nurse.

Reviewer's Comments: This excellent study is not surprising in the fact that asking patients whether they are afraid of their current partner and teaming this up with a maxillofacial injury is more likely to identify patients who are victims of intimate partner violence than a standard interview with a triage nurse. (Reviewer-Edwin D. Joy, Jr, DDS).

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Newer Safety Features May Decrease Facial Injury in MVA

McMullin BT, Rhee JS, et al:
Arch Facial Plast Surg; 2009; 11 (May-June): 165-170

Seat belt use and frontal air bag use are associated with decreased possibility of facial fractures in motor vehicle collisions.

Objective: To look at epidemiological trends in facial fractures sustained in motor vehicle collisions and the effects of occupant and crash-specific characteristics on the likelihood of facial injury.

Design: Retrospective cohort analysis of vehicle facial fracture patients studied by calendar year and vehicle model year from 1993 to 2005.

Methods: Data were collected from the National Automotive Sampling System Crashworthiness Data System database. A multivariate analysis was completed on biomechanical, demographic, and safety restraint data. The study population involved drivers and front seat passengers of automobiles, light trucks, and sport utility vehicles or vans that were in frontal or side collisions. Vehicle occupants were included in the study if they were aged >16 years and had suffered fractures of the mandible, nose, midface, orbit, frontal sinus, or skull base. Patients were not included if they had been ejected from the vehicle or in a rollover collision. Occupant variables included age, sex, height, weight, role (driver or passenger), and use or non-use of restraints. Four types of restraints were considered: unrestrained, seat belt alone, seat belt with airbag, and airbag alone.

Results: In the study years, 167,391 occupants had 1 or more facial fractures, 55,150 had skull base or frontal sinus fractures, and 196,855 had nasal fractures. Most subjects were male drivers. Most occupants were wearing seat belts alone or in combination with airbags. Most of the collisions were frontal impacts, and >70% of the involved vehicles were automobiles. Stationary objects, such as trees, were the most common crash partners. Facial fracture probability decreased significantly with newer vehicle models, as did the per-calendar year probability of facial fractures. Factors that were associated with significantly increased fracture risk were side impacts, increasing vehicle velocity, increased occupant height, non-use of restraints, and collisions with a larger vehicle or stationary object. Those restrained with seat belts only or seat belts with airbags were less likely to have facial fractures. Airbags alone did not reduce the probability of facial fractures. Seat belts are still the most effective restraint modality.

Conclusions: The probability of injuries from facial fractures in motor vehicle collisions is decreasing as vehicle design improvements relating to crash technology have improved in newer models.

Reviewer’s Comments: We should expect decreasing injury probabilities and incidence as older vehicles are retired or scrapped and replaced by newer models with improved safety features. This study helps confirm that trend. (Reviewer-Sterling R. Schow, DMD).

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Intraoral Removal of Proximal Stones - Alternative to Sialadenectomy?

Objective: To report the outcomes of a transoral technique for the removal of proximal stones of the submandibular gland.

Design: Retrospective clinical investigation.

Participants: 186 patients.

Methods: All patients were presenting for the removal of a proximal stone that was not amenable to treatment with lithotripsy or guided basket retrieval. Under general anesthesia, the initial incision was just medial to the sublingual gland. The duct and lingual nerve were exposed with blunt dissection until the stone was identified. A longitudinal ductotomy was performed over the stone, and the stone was removed. The duct was closed primarily, and the floor of the mouth was loosely closed. All patients were placed on systemic antibiotics and chlorhexidine rinses. Long-term analysis was performed with a phone interview.

Results: Of the 186 stones, all but one was removed successfully. The mean follow-up was 28 months (range, 4 to 62 months). One hundred and five patients responded to the phone interview. Two patients had to undergo submandibular sialadenectomy for recurring symptoms. Two patients developed ranulas, which were successfully treated with excision. Eighty patients (76%) were free of symptoms, while eighteen (17%) had intermittent symptoms, although none of the patients sought further care. Six patients (6%) had a persistent tingling on the lateral surface of the tongue but did not seek medical attention.

Conclusions: The transoral removal of proximal stones of the submandibular gland appears to be an acceptable alternative to sialadenectomy. This technique requires meticulous hemostasis while dissecting to ensure preservation of the lingual nerve.

Reviewer's Comments: The transoral approach for the removal of proximal stones has been in the literature for >50 years, but this technique differs in that the duct is primarily closed rather than leaving the duct open in the floor of the mouth. (Reviewer-David M. Grogan, DMD).
Use Antibiotics Before Third Molar Removal to Reduce Complications


Monaco G, Tavernese L, et al:
J Oral Maxillofac Surg; 2009, 67 (1467-1472):

The use of oral amoxicillin 1 hour before surgery significantly reduces postoperative pain and infection.

**Objective:** To evaluate the effect of antibiotic prophylaxis on postoperative complications after the removal of mandibular third molars in young patients.

**Design:** A prospective study comparing the incidence of pain, swelling, fever, and infection in comparable randomized groups of young patients requiring the removal of undeveloped mandibular third molars.

**Participants/Methods:** 59 healthy patients between the ages of 12 and 19 years with undeveloped mandibular third molars were divided into 2 groups. The experimental group received 2 g of amoxicillin 1 hour before removal of the teeth. The control group subjects were treated in an identical manner, but no antibiotics were administered. Over a period of 1 week postoperatively, pain, swelling, elevated temperature, and infection were evaluated. A statistical comparison was performed on these parameters between groups.

**Results:** No significant difference was found in postoperative swelling. There was a significant difference in the amount of postoperative pain and in the number of analgesic drugs taken by the 2 groups. No significant difference was found in elevated temperature; however, there was a significant difference in the number of postoperative infections.

**Conclusions:** The administration of 2 g of amoxicillin 1 hour before surgery significantly reduced postoperative pain, the number of analgesic drugs taken, and the incidence of postoperative infections.

**Reviewer’s Comments:** This is a well-designed study except that the control group was not given a placebo; thus, the patients knew which experimental group they were assigned to, which may have introduced bias into the study. (Reviewer-Edwin D. Joy, Jr, DDS).

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Uptake on Bone Scintigraphy Indicates Early BRONJ

Intravenous Bisphosphonate-Related Osteonecrosis of the Jaw: Bone Scintigraphy as an Early Indicator.

O’Ryan FS, Khoury S, et al:
J Oral Maxillofac Surg; 2009; 67 (1363-1377):

| Full-body scintigraphy showing isotope uptake in the jaws can be an early indicator for BRONJ. |

**Objective:** To characterize bisphosphonate-related osteonecrosis of the jaw (BRONJ) among patients receiving IV bisphosphonates, and to examine bone scintigraphy findings that preceded clinical manifestations of frank disease.

**Design:** A retrospective review of the records of patients diagnosed with BRONJ who had undergone bone scintigraphy for their malignant disease.

**Participants/Methods:** 59 patients with a diagnosis of BRONJ were included in the study; 52 of these patients had received IV bisphosphonates exclusively, and 7 had received IV bisphosphonates and oral formulations. Thirty-five of these patients had existing planar Technetium scintigraphy before the diagnosis of BRONJ. The images were examined for uptake in the jaws, which is not present on a normal scintigraphy study. Jaw uptake of the isotope was compared to CT and clinical examination of the patients.

**Results:** 65% of patients with diagnosed BRONJ showed positive tracer uptake in the jaws; 24 patients had bone scans done after BRONJ diagnosis, and 87% showed intense tracer uptake in the areas of their jaw disease.

**Conclusions:** Scintigraphy can be used as an indicator for the development of BRONJ since a large number of patients who developed this disease had positive uptake on a scintigraphy examination prior to development of the disease.

**Reviewer’s Comments:** This very interesting paper shows that since scintigraphy is frequently done on patients with metastatic carcinoma to show the progression of the cancer, it can be used in order to denote uptake of the tracer in the jaws, which is not found in normal scintigraphy studies. (Reviewer-Edwin D. Joy, Jr, DDS).

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CAD/CAM Implant Guides Improve Implant Placement

Accuracy of Implant Placement Using Precision Surgical Guides With Varying Occlusogingival Heights: An In Vitro Study.


Precision surgical implant guides with an occlusogingival height of 4 mm provide adequate accuracy for implant placement while leaving more interocclusal space for instrumentation than higher implant guides.

Objective: To compare the accuracy of posterior implant placement using 3 different precision surgical guides with different occlusogingival heights, and to compare them to freehand implant placement.

Design: In vitro prospective, comparative study.

Methods: 3 groups of metal surgical guides with occlusogingival heights of 4, 6, and 8 mm were fabricated and used as if they were guides to placing implants in the posterior mandible. The guides were designed to fit over a metal jig that had vertical beams with a 5.5-mm diameter with setting pin holes to accurately attach the guides to bone substitute blocks. All implant sites were prepared in a simulation of actual surgery. Implants were then inserted into the blocks through each of the 3 surgical guides as a guided procedure. In the freehand implant placement, the surgical guides were removed after site preparation, and the implants were placed in the prepared sites freehand. For each of the subgroups, 15 implants were placed, for a total of 90 fixtures. Therefore, 15 implants were placed using each of the surgical guides as both a guided and freehand implant insertion technique. A torque of 25 Ncm was used for placement of all implants. Differences between reference implants and each placed implant as well as implant apex position and angulation discrepancies were calculated.

Results: When placing the implants in a guided technique, the height of the implant guide did not significantly affect the accuracy of the implant position. Implant placement accuracy was not significantly different between placement through 4-, 6-, or 8-mm thick surgical guides. Freehand implant placement, after site preparation using the surgical guides significantly influenced implant level, abutment level, apex position, and implant angulation.

Conclusions: Precision surgical guides with a 4-mm occlusogingival height allow as accurate an implant placement as guides 6 or 8 mm in height. Actual implant insertion through the guides is more accurate than freehand implant insertion into sites prepared through the surgical guides.

Reviewer's Comments: This study was initiated because of the access difficulty encountered using large, precision surgical guides in the posterior regions of the oral cavity. Any design feature that provides accurate site preparation and implant placement while maximizing surgical access space is helpful. This is a really well-illustrated paper. (Reviewer-Sterling R. Schow, DMD).

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Calcitonin Spray--Alternative to Surgery for Central Giant Cell Lesions

Objective: To determine the effectiveness of long-term intranasal calcitonin spray for the treatment of central giant cell lesions.

Design: Retrospective study of patient records.

Participants: 5 patients with histopathologically proven central giant cell lesions.

Methods: Patients had received no treatment of their lesions prior to starting treatment with the authors. None of the patients had abnormal lab values for serum calcium, phosphate, or parathyroid hormone. Panoramic films were made for patients before treatment, every 6 months during treatment, and yearly after lesion resolution. Lesion sizes were measured on the panoramic films. Patients were treated with salmon calcitonin nasal spray 200 U given twice daily. Patient records were ultimately reviewed for demographic data, lesion location and size, response to treatment, side effects of the calcitonin spray, and follow-up findings.

Results: 1 female and 4 male patients made up the study group. Their ages ranged from 8 to 66 years. Three of the central giant cell lesions were in the mandible and 2 were in the maxilla. The size of the lesions ranged from 2 to 5.5 cm x 1.5 to 3 cm. Three of the lesions were clinically aggressive with rapid growth, cortical expansion, and tooth displacement. Calcitonin spray was used intranasally twice daily for a mean of 28 months (range, 9 to 60 months). Treatment stopped when the lesions had resolved clinically and radiographically. No local or systemic adverse side effects were noted during treatment. The clinical outcome was good for all 5 patients.

Conclusions: Calcitonin nasal spray is effective in the treatment of central giant cell lesions with no observed adverse effects in this study. There were no lesion recurrences during the observation period and no indications of any immune neutralizing effect on the biologic activity of the salmon calcitonin.

Reviewer's Comments: The paper's discussion of this lesion and its various treatment modalities is excellent. The bibliography cites virtually all papers that discuss treatment with steroids, interferon alpha 2A, and surgery. (Reviewer-Sterling R. Schow, DMD).

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How Wide Are Adequate Margins in Removal of Oral Cancer?

What Is the Adequate Margin of Surgical Resection in Oral Cancer?

Nason RW, Binahmed A, et al:

An adequate oral cancer histologic resection margin of >3 mm on permanent pathology section will help prolong 5-year survival.

**Objective:** To examine the impact of the width of the surgical margin on treatment outcome following surgical resection of oral cancer.

**Design:** Record review.

**Participants/Methods:** 277 patients with oral squamous cell carcinoma of the oral cavity with complete information on the status of the surgical margin were followed for up to 360 months. Demographic data, social histories, tumor site and classification, surgical and histologic resection margins, and follow-up data were collected. Multivariate Cox proportional hazard models were used to determine the effect of the dimensions of the surgical margin on 5-year survival.

**Results:** 22% of the subjects had microscopic tumor at the inked surgical margin, and 44% had tumor within 5 mm of the surgical margin. Lesions of advanced T and N status were more likely to have tumor-involved surgical margins. Transoral tumor excisions and marginal mandibulectomy procedures with margins of <=2 mm were more common than with surgeries involving composite resections and segmental mandibulectomy. The use of intraoperative frozen sections did not correlate with either involved or clear surgical margins. Patients with involved surgical margins were treated with radiotherapy with a median dose of 5000 cGy. Four patients died within 30 days of surgery, and 13% of patients treated with surgery alone had complications. Patients treated with both surgery and radiation had a 43% complication rate. Tumors recurred in 33.9% of patients, and those with margins of <=2 mm had the highest local recurrence rates. Overall survival for stage I disease was 75.6%, decreasing to 64.9%, 57.5%, and 44.9% for stages II to IV, respectively. The mean recurrence time for patients with positive margins was 8.77 days, with increasing clear surgical margins significantly extending local recurrence times. Margin status had a significant impact on 5-year survival, with each 1-mm increase in clear margins decreasing the risk of death at 5 years by 8%. Patients with positive margins had a 2.5-fold increase in death rates at 5 years. Margins of >=3 mm were associated with the best 5-year survival rates.

**Conclusions:** Margin status in oral squamous cell carcinoma is an important predictor of outcome. Inadequate margins should be considered if tumor cells are <3 mm of the inked surgical margin in 3 dimensions.

**Reviewer's Comments:** Surgeons need to consider that adequate margins on permanent histologic section will be less than what the margins appear to be at surgery. Surgical specimens shrink 40% to 50% when fixed in formalin. Adequate surgical margins should be 6 to 8 mm. (Reviewer-Sterling R. Schow, DMD).

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Snow Skiing and Snowboarding—High Risk for Traumatic Injury


Of major injuries acquired while skiing or snowboarding, head injuries are the most common, followed by chest, spinal, and extremity involvement.

**Objective:** To identify injury patterns, incidence, and risk factors associated with skiing and snowboarding injuries.

**Design:** 10-year retrospective review using the Alberta Trauma Registry as the primary data source.

**Participants:** 196 patients (56.6% were skiers and 43.4% were snowboarders).

**Methods:** Patients identified for study inclusion had an Injury Severity Score (ISS) $\geq 12$ from injuries caused during skiing or snowboarding activities. Data recovered from the trauma registry included age, sex, ISS, on-scene and presenting vital signs, Glasgow Coma Scale score, mechanism of injury, injury accident location, type and routing of hospital transport, diagnosis, procedures performed, hospital and ICU lengths of stay, time of year, and time of day.

**Results:** During the 10-year study period, 196 patients were admitted with skiing or snowboarding injuries. More than half (56.6%) of the patients were skiers, 81.6% were males, and the mean age was 31.5 years. The mean ISS was 20.8. ICU support was needed for 21.9% of the injured subjects. Five patients (2.6%) died. Most of the injuries were caused by falls or collisions, and most occurred during the middle of the ski season and in the afternoon. Of the injured patients, 60.7% were transported by ground ambulance, and another 24.7% were transported, at least partially, by helicopter. Finally, 14.3% were taken to the hospital by private vehicles. Mean transport time was 4.4 hours. Brain (52%), chest (42.9%), spine (34.2%), and extremity (33.7%) injuries were the most common. Emergency surgery was required for 40.2% of patients. The most common surgical procedures were orthopedic, followed by abdominal; 97.4% of the patients were discharged alive. Of the 5 patients who died, 4 had brain injuries and 1 had a cardiac arrest. The overall incidence of alpine injuries in this study was 1 per 15,300 skier-days. Serious injuries with permanent sequelae or death occurred once per 150,000 skier-days.

**Conclusion:** Helmet use could not be identified or ruled out in the study. Skiing and snowboarding injury patterns are similar. Most injuries happen in the afternoon when slope conditions are the worst and the skier or boarder may be fatigued. Brain and spinal column injuries are the most common severe alpine injuries.

**Reviewer’s Comments:** The study could not stratify the skill levels of the injured skiers or boarders. Overall, the incidence of ski-slope injury is probably closer to 4 to 8 per 1000 skier-days, but most of these are isolated orthopedic injuries that do not require hospital admission and thus could not be included in this study. (Reviewer-Sterling R. Schow, DMD).

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Implants Do Well in Regenerated Bone

Clinical and Radiographic Comparison of Implants in Regenerated or Native Bone: 5-Year Results.

Beni A Gj, Jung RE, et al:

Implants placed with concomitant bone regeneration around fenestration, dehiscence, and infrabony defects perform equally well as implants placed in native bone.

Objective: To compare implants placed in areas with some regenerated bone with implants placed in native bone in the same patients.

Design: Cross-sectional retrospective study.

Participants: 34 patients needing implants in both native bone and in areas where dehiscence, fenestration, or infrabony defects needed guided-bone regeneration at the time of implant placement.

Methods: All implants placed were Nobel Biocare machine surface fixtures placed using a 2-stage protocol. Implants sites were closed for primary healing and were exposed and loaded after at least 6 months of healing. If, after insertion, the implants had osseous defects, guided-bone regeneration over the exposed implant surface was performed. Grafts included Bio-Oss, autologous bone, or mixtures of the 2 with the site covered by a resorbable collagen membrane. A total 68 implants were placed, 35 in the mandible and 33 in the maxilla. Thirty-four of the guided-bone regeneration implants and 34 implants in the control group were followed by a single investigator clinically and radiographically for a mean of 57 months. Items evaluated for all fixtures included plaque control, probing depth, bleeding on probing, width of surrounding keratinized mucosa, marginal bone level, and implant survival.

Results: Patient demographics, smoking habits, and co-morbidities were considered but had no noticeable results of significance. The cumulative implant survival rate after 5 years was 100% for implants in areas with regenerated bone and 94.1% for implants in native bone. Implant dimensions were similar and comparable for both types of implant sites. Over the 5-year follow-up, neither type of implant had significant differences in plaque control, probing depth, bleeding, width of keratinized mucosa, or marginal bone levels. Overall, implants that had been placed into sites with bone regeneration were as successful as implants placed in native bone.

Conclusions: Implants in areas with regenerated bone have clinical performance on par with implants placed in native bone in the same patients.

Reviewer's Comments: Guided-bone regeneration using autologous grafts, allogeneic or xenogenic material, different barrier membranes, and new recombinant growth factors has made it possible for the implant surgeon to provide care only dreamed about in the past. What new or exciting patient care advances will we see in the next 20 or 30 years? (Reviewer-Sterling R. Schow, DMD).

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Is Brachytherapy Effective for Head and Neck Malignancy?

Clinical Evaluation on Controlling Postoperative Recurrence of Oral Squamous Cell Carcinoma by Intracavity Brachytherapy.

Li Y, Li L-J, et al:


Patients treated with surgery and brachytherapy for oral squamous cell carcinoma have a better quality of life and increased life expectancy than patients treated with surgery and external radiotherapy.

Objective: To determine the outcomes associated with the use of brachytherapy and external radiotherapy on oral squamous cell carcinoma.

Design: Retrospective clinical investigation.

Participants: 193 patients.

Methods: Patients presented for treatment of a primary oral squamous cell carcinoma of the oral cavity. All patients underwent surgical resection and radical neck dissection. Seventy-eight patients underwent surgical treatment and then refused any further treatments; these patients served as controls. Eighty-five patients had intracavity and external radiotherapy, and 108 were treated with surgery and brachytherapy. Indications for brachytherapy consisted of the following: lesions <3 cm, surgical margin wide enough for total resection, no evidence of perineural invasion, and physical limitations to full-dose external radiotherapy. The median follow-up was 56 months (range, 10 to 134 months). Recurrence was determined with CT, MRI, and clinical examination.

Results: 58% of patients died during the duration of the study (24% in the surgery-only group, 17% in the surgery and brachytherapy group, and 17% in the surgery and brachytherapy with external radiation group). Local recurrence was the cause of death in 79 patients (29%): 37 in the surgery group, 22 in the surgery with brachytherapy group, and 20 in the combination group. The lowest overall 5- and 10-year survival rate was seen in the surgery-only group, 59% and 17%, respectively. The 5-year survival rate for surgery and brachytherapy was 78%. The 10-year survival rate for the brachytherapy and combination groups was statistically equal, 57% versus 47%, respectively.

Conclusions: Patients undergoing surgery and brachytherapy had a better life expectancy and a better quality of life than surgery alone or the combination of brachytherapy and external radiation. Early detection and the addition of brachytherapy may control local tumor recurrence following surgery.

Reviewer's Comments: When the data were further analyzed, initial staging of the malignancy was the primary indicator for survival. Therefore, brachytherapy may be effective in increasing survival if the tumors are found at an early stage and total surgical resection is possible. (Reviewer-David M. Grogan, DMD).

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Causes of Facial Injuries to Women


Gerber B, Ahmad N, Parmar S:

Domestic violence represented 45% of all violent crimes resulting in facial injury in this study. Women in their 20s and 30s represented the 2 age groups most commonly involved in domestic violence.

Objective: To determine the incidence of maxillofacial injuries to women and the relationship to alcohol consumption.

Design: Retrospective cross-sectional investigation.

Participants: 251 females.

Methods: All patients were referred to a single maxillofacial unit for consultation from an emergency department. The study period was 6 months (May through October) over a 5-year span. Only traumatic or accidental facial injuries were included in the study; infections of tooth origin were excluded. Injury types were classified as interpersonal violence, domestic violence, accident, or fall. Domestic violence was defined as an assault that involved a partner as the perpetrator.

Results: A total of 628 women were seen on referral, with 251 presenting with facial injuries that met the inclusion criteria. The total number of referrals increased over the 5 years of the study. Forty-four percent of referrals were determined to be an accident in nature, 29% were violent crimes (interpersonal and domestic), and 27% were the results of falls. Sixty-nine percent of patients had a single site of injury, and 44% had facial fractures without soft-tissue involvement. Females aged >60 years represented the largest age group, but interpersonal violence was not a significant mechanism of injury in this group. When alcohol was involved, 40% had interpersonal violence as the mechanism of injury. Domestic violence represented 45% of all violent crimes, and the largest age group was 20 to 29 years followed by 30 to 39 years. All cases of domestic violence occurred in private places.

Conclusions: The number of facial injuries to women increased over the study period, and nearly one-third of all facial injuries to women were the result of violent crimes. The most common mechanism of injury was an accident.

Reviewer’s Comments: This paper once again documents the fact that women are increasingly the victims of violent crimes. The data in this paper are most likely under-reported secondary to the fact that if the patient was admitted to the hospital for a facial injury and not referred to the oral surgery clinic first, the incident was not included in the study. (Reviewer-David M. Grogan, DMD).

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How Thick Is the Ramus?

Computed Tomography Morphology of the Mandibular Ramus at the Lingual Plane in Patients With Mandibular Hyperplasia.


In this study, both the mandibular thickness and marrow space were significantly smaller in mandibular hyperplasia patients than in controls.

Objective: To determine the morphology of the mandibular ramus in patients with mandibular hyperplasia.

design: Retrospective clinical investigation.

Participants: 45 patients.

Methods: 25 patients presented for surgical correction of mandibular hyperplasia and underwent spiral CT of the mandible. The 20 patients who served as controls had no facial deformities and underwent spiral CT imaging for other maxillofacial disorders. A total of 90 mandibular rami were imaged, and the following measurements were made at the level of the mandibular foramen: mandibular thickness (through the center of the mandibular canal), mandibular canal, marrow space (between the outer mandibular canal and inner surface of the buccal cortex), and width of the buccal and lingual corticies.

Results: The mandibular thickness was found to be thinner in the mandibular hyperplasia patients than in controls (8.5 vs 9.6 mm, respectively). The bone marrow space (between the mandibular canal and buccal cortex) was found to be narrower in the mandibular hyperplasia patients (1.5 vs 2.5 mm in controls). Both of these values were found to be statistically significant. All other measurements were not found to be significantly different between experimental and control patients.

Conclusions: Both the mandibular thickness and marrow space were found to be significantly smaller in mandibular hyperplasia patients than in controls. These differences may be associated with a greater risk of nerve damage and a bad split associated with a sagittal split osteotomy.

Reviewer's Comments: Another well-done study revealing the anatomical differences of the mandibular ramus in patients with skeletal deformities--something all of us are acutely aware of. (Reviewer-David M. Grogan, DMD).

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Is Tooth Tipping Minimized With Tooth-Borne Distractor?


Okcu K, Sencimen M, et al:

The tooth-borne appliance resulted in significant tipping of the incisors. The coronal section of the tooth advanced significantly further than the apices.

Objective: To present the outcomes of distracting the premaxilla with a tooth-borne device.

Design: Retrospective clinical investigation.

Participants: 10 patients.

Methods: All patients were presenting with a Class I molar occlusion and maxillary hypoplasia. None of the patients were syndromic. A cap splint device was constructed with orthodontic bands placed on the laterals, first premolars, and first molars. A Hyrax expansion screw was soldered to the banded maxillary first molars, and the anterior segment of the screw was soldered to a bar placed at the cingulum of the anterior teeth. The distraction osteotomies distal to the laterals were performed through a buccal approach. The segment was mobilized, and the splint was cemented on the first postoperative day. Activation of the distraction was begun on the seventh postoperative day. All distractions were over-corrected, and a consolidation period of 8 weeks was utilized. Preoperative and postoperative CT scans were digitized to determine tooth movement and tipping.

Results: In all cases, the distraction provided for appropriate overjet. Panorex films revealed no root resorption evident following the distraction. No statistical differences were noted between left and right side advancement. The average distance moved was 3.5 mm at the apex, 5.5 mm at the alveolar ridge, and 7.4 mm at the crown. The ratio of apex-to-crown movement was 47% on the right and 45% on the left, both indicative of significant tipping.

Conclusions: The use of a tooth-borne device resulted in satisfactory correction of the position of the premaxilla, but significant tooth tipping was noted. All tipping was corrected with post-distraction orthodontics.

Reviewer’s Comments: Another good paper regarding tooth-borne versus skeletal anchorage for distraction. The tooth-tipping results were consistent with other tooth-borne techniques, with the big liability being relapse. (Reviewer-David M. Grogan, DMD).

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Oral Squamous Cell Carcinoma--How Site Affects Prognosis

Prognostic Importance of Site in Squamous Cell Carcinoma of the Buccal Mucosa.

Shaw RJ, McGlashan G, et al:

Buccal squamous cell carcinomas do not appear to have a poorer prognosis compared to other intraoral sites.

**Objective:** To determine if the site of an oral cancer has a specific outcome on the rate of recurrence and survivability.

**Design:** A retrospective clinical investigation.

**Participants:** 482 patients.

**Methods:** All patients presented for their primary treatment of an oral squamous cell carcinoma over a 10-year period from 1992 to 2002. All patients were treated with primary resection; those treated with radiotherapy only were excluded from the study. Patient demographics, surgical treatment, and outcomes were reviewed from the patient chart, and histopathology was evaluated. The outcomes of buccal tumors were compared to the outcomes of tumors of other intraoral sites. The cause of death was confirmed from a national database.

**Results:** 81 of the 482 tumors were classified as buccal tumors. The buccal tumors were further divided into cheek mucosa, buccoalveolar, and retromolar. Of the other non-buccal tumors, the most common sites were anterior floor of the mouth and anterior two-thirds of the tongue. No significant differences were noted between those with a buccal carcinoma compared to other anatomical sites. The overall 5-year survival rate for both groups was 70%.

**Conclusions:** For surgically treated oral squamous cell carcinoma, tumor site does not appear to have an impact on prognosis. Buccal carcinomas do not appear to have a poorer prognosis.

**Reviewer's Comments:** Very interesting study, but difficult to determine how the authors factored in or failed to factor in tumor stage, presence of positive nodes, and bone involvement--all factors that have been shown to influence outcomes. (Reviewer-David M. Grogan, DMD).

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