Dalhousie University, Faculty of Dentistry

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Program Grant Application Approval

On June 21st, the Medical Research Council forwarded approval for the letter of intent for a Program Grant application which had been submitted for the April deadline in the general subject area of Biomaterials. A meeting of 13 of the potential participants in the MRC Program grant application held their first meeting on the 9th July, individuals were present from the four Faculties of Medicine, Dentistry, Science and Health Professions. The comments received from the reviewers of the letter of intent were reviewed and discussed. The initial plan of action necessary to put together the program grant submission were formulated. It was recognized that a large grant application of this type requires a significant amount of commitment, dedication and hard work to deal with the major effort involved.

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Best Wishes to Jim

Dr. James Johnson, departs from our Faculty to take up a position in biomechanics research in London, Ontario. Jim will be sadly missed. He has been a tower of strength in the orthopedic research projects conducted between the Division of Biomaterials and the Department of Surgery. We wish Jim and Nicole all the best in their new life in Upper Canada.

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Bioethics in Human Research

Derek Jones in his capacity as Assistant Dean (Research) attended a planning meeting (June 30th) to prepare for the site visit to Dalhousie University of the representatives of the National Council on Bioethics in Human Research (NCBHR). This visit will take place in November 1993. When the MRC reviewed its guidelines on research involving human subjects, it acknowledged the fact that any ethics review system relying on an independent review by separate local Research 'Ethics Committees' would require assistance and support in terms of information and interpretation of guidelines. MRC together with Health and Welfare Canada, provided funding and invited the Royal College of Physicians and Surgeons of Canada to establish the National Council on Bioethics in Human Research. The NCBHR have a mission to encourage high ethical standards in biomedical and health-related research involving human subjects. The NCBHR aim to help by interpreting and promoting existing ethical guidelines for biomedical and health-related research involving human subjects. The NCBHR advise and consult with institutions to help establish guidelines and procedures for the evaluation of ethics committees. They may also assist institutional ethics committees to resolve contentious issues involving biomedical and health-related research with human subjects. This site visit and the preparations which precede it will help Dalhousie University to focus on the manner in which were address the important and complex question of ethical review of our research involving human subjects. Faculty members are reminded that any research involving human subjects irrespective of the source of funding or indeed even if no funding is involved, are required to submit an application through the Dental Research Development Office for review by the Faculty Ethics Committee. No research on human subjects can commence until approval has been obtained.

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Clinical Research Papers to be Presented.

Three Papers have been accepted for presentation at the Annual meeting of the American Association of Oral and Maxillofacial Surgeons in Orlando, Florida in September 30th October 5th 1993. These papers will be presented by the members of the Department of Oral Diagnosis and Oral Maxillofacial Surgery. Support in part to fund the research presentations came form the J. P. Laba Research Fund. Details of these papers are to be found on pages 2 and 3 of this edition.

Induced Hypotensive Anesthesia for Adolescent Orthognathic Surgery Patients

D. S . Precious, D. A Bosco, W. M. Splinter, & J. Muir
Depts of Oral Diagnosis and Oral Maxillofacial Surgery and Anesthesia.

Problem: Deliberate hypotensive anesthesia for orthognathic surgery is often requested by the surgeon because the reported advantages include reduced blood loss and improved operating field. There are conflicting results as to the validity of the claimed advantages and there are no data concerning a surgical population of exclusively adolescent patients. The purpose of this study was to compare blood loss, quality of surgical field and duration of procedure with and without hypotensive anesthesia in orthognathic surgery patients who had not yet reached 16 years of age.

Method: This prospective, randomized, blocked, stratified, single blind study evaluated 50 adolescent, ASA class I and II subjects who underwent BSSO and/or LeFort 1 and/or genioplasty. To control for difference in operative procedure patients were stratified and blocked according to their proposed surgery. Blood pressure was maintained within 10mm Hg of baseline systolic values for the control group or within 75% of baseline systolic values in the induced hypotension group. A single surgeon who was unaware of the anesthetic method rated the surgical field every 15 minutes using Fromme's ordinal scale. At completion of the operation the surgeon and the anesthetist independently estimated operative blood loss. In addition, a serum hematocrit was determined so that a third estimate of intraoperative blood loss was calculated by multiplying the patient's estimated blood volume by the result of the division of the difference between the preoperative and immediate postoperative hematocrit by the preoperative hematocrit.

Data Analysis: The data were analyzed using ANOVA, chi-square analysis and linear regression analysis.

Results: The groups were identical with respect to age, weight, and sex. The induced hypotension group was associated with significantly less blood loss (control group = 7.9± 3.2 ml/Kg vs hypotension group 5.4± 2.0 ml/Kg, $p<0.002$) and an improved surgical field (control group = 1.7± 0.6 vs hypotensive group = 1.2± 0.4, $p<0.0001$. An increase of 1 in the average surgical field rating for a given patient resulted in an increase of 156 ml; 95% c.i. = 74-238 ml/Kg). The induced hypotension group had a non-significant reduction in duration of procedure. No patient in either group received blood transfusion.

Conclusions: Deliberate hypotensive anesthesia in adolescent patients undergoing orthognathic surgery reduces blood loss and improves operating conditions.

References:

1) Fromme GA, *et al.* Controlled hypotension for orthognathic surgery. Anesth Analg 65:683-686, 1986.
2) Fridrich KL: Anesthetic techniques to reduce blood loss and transfusion therapy. Oral and Max Surg Clinics of North America 4:863-874, 1992.

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Incidence of Mandibular Fracture in 1256 SSO: with and without impacted third molar teeth

D. S . Precious, K. E. Lung, and R. H. Goodday.
Dept. of Oral Diagnosis and Oral Maxillofacial Surgery.

Problem: It has been recommended that removal of impacted mandibular third molars be completed six months prior to sagittal split osteotomy because it is thought that the presence of the impacted third molar tooth compromises the bony architecture of the mandible such that there is increased incidence of intraoperative mandibular fractures. [1,2] Currently, there are no data that support this practice. The purpose of this study was to determine the incidence of mandibular fracture in sagittal split osteotomies, in the presence or absence of impacted third molar teeth.

Method: This retrospective study evaluated 1256 mandibular sagittal split osteotomies during the period April 1, 1988 to March 31, 1990. There were two groups of patients:

Group I. Impacted third molar teeth were removed during the sagittal split osteotomy.

Group II. No third molar teeth were present for at least six months prior to sagitt split osteotomy.

The following records were used in this study: admission, operative and progress notes, pre and post surgery lateral cephalometric, posterior-anterior cephalometric, and panoramic radiographs, discharge summaries and follow-up notes. All mandibular fractures were assessed and recorded. The statistical analysis consisted of Chi square analysis of contingency table for $p<0.05$. Patient demographics were recorded.

Results: There were 174 males and 459 females (633 patients) with a mean age of 24.44 years (range 12.07 - 57.93) involved in this study. In the 1256 mandibular sagittal split osteotomies, there were 24 (2.0%) osteotomies with mandibular fractures and 1232 (98%) osteotomies without mandibular fractures. Five mandibular fractures (5/24 = 20.8%) had impacted third molar teeth present and 19 mandibular fractures (19/24 = 79.2%) had no impacted third molar teeth present. This is statistically significant for $p<0.05$.

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Conclusions: This study suggests that surgical removal of impacted third molar teeth 6 months prior to BSSO will not necessarily reduce the incidence of unwanted mandibular fracture during BSSO. The judgement of the surgeon should determine the most appropriate treatment for each patient. In most cases wisdom tooth removal and BSSO can be safely carried out in one operation.

References:

1. Proffit WR, White R: Surgical orthodontic treatment. St. Louis, Missouri, Mosby Year Book, 1991, p202.
2. Bell W: Surgical correction of Dentofacial Deformities: New Concepts. Philadelphia, PA, W.B. Saunders Co., Vol III, 1985, p738

Pain Control following Orthognathic Surgery: a study of 125 patients

D. S . Precious and J. Multari.
Dept. of Oral Diagnosis and Oral Maxillofacial Surgery.V. G. Hospital.

Problem: Traditional "as required" opioid analgesics fail to provide adequate post surgical pain control on a consistent basis. The purpose of this prospective, randomized study was to investigate alternative regimens of postoperative analgesia for patients undergoing orthognathic surgery.

Method: Pilot studies with 20 orthognathic surgery patients were carried out at both pediatric and adult hospitals to verify the ineffectiveness of traditional "p.r.n." opioid analgesics in controlling postoperative pain. In the principal study of 125 patients, the use and understanding of a ten cm visual analog scale (VAS) with "no pain" and "severe pain" at the zero and ten cm anchors, respectively, was explained and confirmed for all patients. The subjects were randomly assigned in groups of 25 to one of two study groups (codeine vs naproxen) at the pediatric hospital and to one of three study groups (codeine vs naproxen vs patient controlled analgesia [PCA]) at the adult hospital. Postoperative analgesia was assessed for two days postsurgery q4h from 08.00 to 20.00 hours with the use of the VAS.

Data Analysis: Mean daily and mean overall VAS scores were treated parametrically. In addition mean daily scores were categorized as comfort days when the VAS scores were less than 3.0 cm, and as discomfort days when the mean scores were greater than or equal to 3.0 cm. These data were analyzed categorically using chi square tests. At the pediatric hospital, independent t-tests were used to analyze patient demographics, pain scores, procedure duration, and vital signs. Chi-square tests were used to analyze sex, comfort/-discomfort days, and nausea and vomiting. At the adult hospital one-way ANOVAs were used to analyze patient demographics, pain scores, procedure duration, and vital signs. Post hoc testing of ANOVA was performed with Duncan's Multiple Range Test. Chi-square tests were used to analyze sex, comfort/discomfort days, and nausea and vomiting. Comparisons of mean VAS scores for collapsed categories were made using t-tests.

Results: In adolescent patients undergoing orthognathic surgery, both the naproxen and the codeine analgesia regimens provide equally effective postoperative analgesia. In adult patients, the naproxen and the PCA regimens both provide statistically significant better analgesia than does the traditional codeine regimen.

Conclusions: Adolescent patients undergoing orthognathic surgery are given significantly less opioid analgesic than that given to adult patients for similar procedures. PCA in adult orthognathic surgery patients uses less opioid and provides safe and reliable superior analgesia when compared to the traditional codeine regimen, which produces an increased incidence of nausea.

References:

1.) Rosenberg M: Patient controlled analgesia. J Oral Maxillofac Surg 50:386-392, 1992.
2.) Berde CB: Pediatric postoperative pain management. Pediatric Clinics of North America 36:9210940, 1989.

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Education

"Education is the best provision for old age."

Aristotle.

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Future

"The future that we study and plan for begins today."

Chester O. Fischer.

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RESEARCH NEWS ITEMS

Do you have any research news which you would like to share with your colleagues? If so, please forward such items to the Research Development Office. It would help if submissions were produced on a (Macintosh) disc in Microsoft Word,

or simply call 1675.

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The Right Direction

As we contemplate our future research and scholarship development within the Faculty we should take note of the much quoted legal authority, Oliver Wendell Homes, who once said "I find the greatest thing in the world not so much where we stand as in what direction we are moving." Had he been a a faculty member at Dalhousie University in 1993, he might well have recommended working together in collaborative research since more resources and skills are required than any of us possess individually.