

The Impact of General and Local Factors as Criteria of Assessment for the Difficult Lower Wisdom Tooth. A Retrospective Study

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الخلاصة

الاهداف: تهدف الدراسة الى تقييم العلاقة بين العوامل العامة و الخاصة المؤثرة أثناء عملية قلع ضرس العقل السفلي المظوم، من بين هذه العوامل العمر، الجنس، فتحة الفم، الشكوى الرئيسية، كمية العظم حول الضرس المظوم كما يظهر في الرقائق الشعاعية و خبرة الطبيب. **المواد وطرائق العمل:** تم تقييم مئة و عشرين حالة قلع ضرس العقل السفلي المظوم التي تحتاج قلع جراحي لأشخاص أصحاء من الناحية الجسمانية، تراوحت أعمارهم بين 17-47 سنة من كلا الجنسين، تم إجراء العمليات من قبل مجموعتين من الأطباء الأولى ذوي خبرة و الثانية قليلي خبرة و قد تمت إجراء العمليات باستخدام التحدير الموضعي، في الفترة بين تشرين الثاني 2008 لغاية حزيران 2010 في قسم جراحة الفم في كلية طب الأسنان- جامعة الموصل، تم جمع البيانات و إخضاعها للإحصاء باستخدام برنامج SPSS الإحصائي. **النتائج:** تضمنت العينة 62.5% من الإناث و 37.5% من الذكور، كان متوسط العمر 24.5 سنة، و معدل فتحة الفم 39 ملم، الشكوى الرئيسية توزعت بالشكل التالي (الم 65.8%، مراجعة دورية 25.8%، تقويم أسنان 6.7%، أسباب أخرى 2.0%) بحسب تصنيف بيل و جريجوري توزعت النسب بالشكل التالي (صنف I 44.2%، صنف II 44.1%، صنف III 11.7%) بالنسبة إلى زاوية الضرس المظوم كانت الأفقي 15.8% انسي الزاوية 44.2%، عمودي 24.2%، وحشي الزاوية 15.8%، و بالنسبة للمستويات كانت (المستوى 40.1% و المستوى ب 36% و مستوى ج 17%) وكان معدل الزمن المستغرق بالنسبة للجراحين ذوي الخبرة 23.33 دقيقة بينما كان الوقت لغيرهم 53.11 دقيقة، ومن الناحية الإحصائية كان هناك فرق معنوي بين زمن العملية و خبرة الطبيب في حين لم يكن هناك أي فرق معنوي بين زمن العملية و صنف الضرس المظوم و الزاوية والمستوى. **الاستنتاجات:** بغض النظر عن نوع الدليل المستخدم لقياس صعوبة قلع سن العقل المظوم جراحيا بالإضافة إلى العوامل الموضعية العامة للمريض مثل العمر، الجنس، الشكوى الرئيسية و فتحة الفم، استنتجت هذه الدراسة أن عامل الخبرة والمهارة للجراح له تأثير مهم جدا إحصائيا على الوقت اللازم لإتمام العملية.

ABSTRACT

Aims: The aim of the study is to evaluate the relationship of the general and local factors which have an impact on the difficulty during the removal of impacted lower wisdom teeth. Several factors such as age, gender, mouth opening, chief complain, bone surrounding and radiographic appearance and surgeon experience, will be included as factors which affect the difficulty during the removal of impacted lower wisdom teeth. **Materials and methods:** One hundred twenty medically fit patients were selected with an age range between 17-47 years of both sexes had impacted lower third molars and indicated for surgical extraction. Surgical removal performed by senior surgeon and junior, operation was performed under local anesthesia, all cases done between November 2008- June 2010, in oral and maxillofacial surgery department\dentistry college university of Mosul the collected data were analyzed statistically by using SPSS program. **Results:** the sample comprised of 62.5% female and 37.5% male with mean age 24.5 years, the mean of the mouth opening was 39mm, the chief complain distributed as follow (pain 65%, dental check up 25.8%, orthodontic reasons 6.7% and others 2.5%), according to Pell and Gregory classification the percentage were class I 44.2%, class II 44.1%, class III 11.7%, while the angulations were horizontally 15.8%, mesioangular 44.2%, vertical 24.2%, distoangular 15.8%, levels position A 40%, position B 36%, position C 17%. The mean time for the experienced surgeon was 23.33 minutes while for the non experienced 53.11 minutes. There was statistically significant difference between the time of the operation and the experience of the surgeon at P value =0.003. The relation between the time of the operation and class, level and angulations of impaction was statistically not significant. To successfully evaluate the difficulty of lower third molar extraction prior to surgery, clinical, radiologic findings, local and general factors must be taken into account and there are special indexes used in the assessment of difficulty in lower wisdom tooth surgery with no one of them considered the most reliable one because of the difference in the studies samples and in the local and general factors that had been used in the assessment of difficulty like age, gender, mouth opening, chief complain in addition to the clinical and radio graphical features. **Conclusions:** in regardless of type of difficulty index used in addition to local and general factors as a criteria for the assessment of lower molar

tooth extraction , we concluded that the factor of experience of the surgeon is the most important factor that have a significant effect on the duration of the surgery.

Key words: Difficulty criterions, Assessment of difficult lower wisdom tooth.

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INTRODUCTION

An impacted tooth is one that fails to erupt into the dental arch within the expected time. The tooth becomes impacted because adjacent teeth, dense overlying bone, or excessive soft tissue prevents eruption. Because impacted teeth do not erupt, they are retained for the patient's lifetime unless surgically removed. ⁽¹⁾ The surgical removal of third molar teeth may result in a number of complications including pain, swelling, bleeding, alveolar osteitis (dry socket) or nerve dysfunction. ⁽²⁾ The factors that usually contribute to such problems are numerous and include the patient, tooth-related and the surgeon's operative experience. ⁽³⁾ Although careful attention to surgical details, including proper patient preparation, asepsis, meticulous management of hard and soft tissue, controlled force when applying surgical instruments, hemostasis and adequate postoperative instructions may help to reduce this rate of complications it has not been proven to eliminated them. Other parameters found to affect the complication rate include age ⁽⁴⁾ ,gender ⁽⁵⁾ and the surgeon's experience. ^(6,7) The proportion of third molar that are removed when no disease is present is reported to be between 18% and 40%. ^(8,9,10) The quality of health care is determined by two main factors : the reliability of the judgments and decisions that govern how we act and the skill with which those actions are carried out. ⁽¹¹⁾ Factors reported to be associated with third molars complications include age, gender, medical history, oral contraceptives, presence of pericoronitis, poor oral hygiene, smoking, type of impaction, relationship of third molar to the inferior alveolar nerve, surgical time and , use of pre-operative antibiotics, use of topical antiseptics, use of intra-socket medications and anesthetic. ^(12,13) The aim of the study

is to evaluate the relationship of the general and local factors which have an impact on the difficulty during the removal of impacted lower wisdom teeth.

MATERIALES AND METHODS

One hundred twenty medically fit patients were randomly selected patients selected with an age range between 17–47 years of both sexes had impacted lower third molars and indicated for surgical extraction, who visited oral and maxillofacial surgery department/dentistry college university of Mosul, between November 2008- June 2010 , A complete clinical history was taken at the first visit, with collection of the following information: patient age and sex; chief complain, identification of the molar to be removed and reason for removal; level of impaction (totally covered by bone, totally covered by soft tissue, partially covered by soft tissue, or completely erupted); relative depth and space for eruption according to the Pell-Gregory classification; angle according to Winter's classification. ^(14,15) Difficulty index by Pedersen was used preoperatively to assess the surgical difficulties of the impaction which had been ranged between the minimally difficult , moderately difficult and very difficult cases according to the ramus relationship, spatial relationship and depth of the impaction. ⁽¹⁶⁾ postoperative difficulty was scored with a modified version of the Parant scale (This scale defines 4 levels of difficulty depending on the surgical maneuvers required for the extraction of lower third molars: I:simple extraction; II :extraction requiring ostectomy; III; extraction requiring ostectomy and coronal section; and IV: complex extraction (root section). ^(17,18) Surgical removal performed by senior surgeon which had more than 5 years experience in oral surgery and junior surgeon which had less than 2 years' expe-

rience^(18,19), all surgeries were performed under local anesthesia by nerve-block anesthesia of the inferior alveolar nerve, lingual nerve and buccal nerve with two 1.8-mL lidocaine with 1:80,000 epinephrine (Houns Co.,ltd. Korea). A mucoperiosteal flap was raised, generally by an incision distal to the lower second molar along the anterior border of the ascending ramus of the mandible with mesial releasing incision in this molar. Ostectomy and tooth or root sectioning were performed where necessary using a low-speed round tungsten carbide bur under coolant irrigation by saline solution.

The area was irrigated with saline solution and curettage of granulation tissue was performed. The wound was sutured with 3/0 silk sutures and a folded gauze was applied over the surgical wound to achieve compression and adequate home-

ostasis. The sutures were removed a week after the operation. Patients were also given appropriate instructions and recommendations regarding the postoperative recovery period. The collected data were analyzed statistically by using version 17 SPSS program and the tests that had been used in this study included ANOVA test which describe the statistical difference between the parameters then we used the post hoc tests which included the least square difference(LSD) test, one sample T test and paired T test to study the statistical difference between the parameters.

RESULTS

The sample comprised of 62.5% female and 37.5% male as showed in (Figure 1)

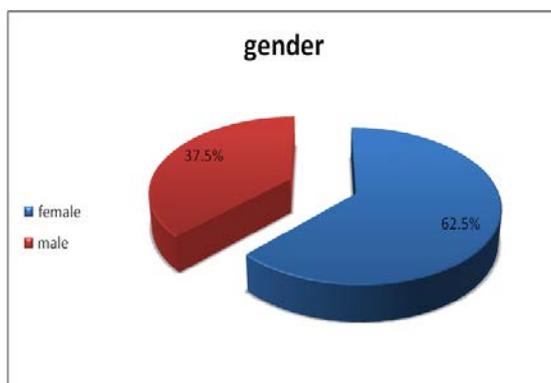


Figure (1): Distribution of gender

With mean age 24.5 years, the mean of the mouth opening was 39mm, the chief complain distributed as follow(pain 65%,

dental check up 25.8%, orthodontic reasons 6.7% and others 2.5%) as showed in (Table 1).

Table (1): Distribution of the chief complain

Chief complain	Number of cases	%
Pain	78	65
Check up	31	25.8
Orthodontic	8	6.7
Others	3	2.5
Total	120	100

According to Pell and Gregory classification the percentage were class I

44.2%, class II 44.1%, class III 11.7%, as shown by (Figure 2)

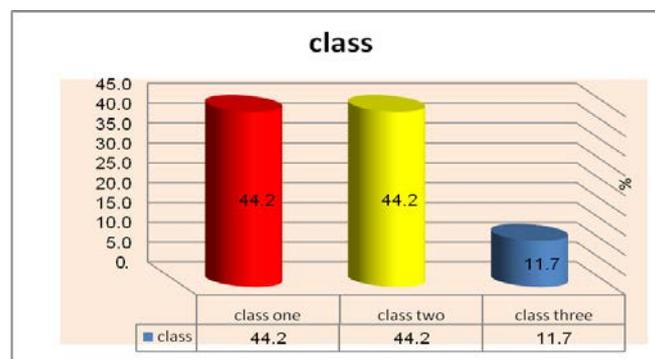


Figure (2): Distribution of class of impaction

While the angulations were horizontally 15.8%, mesioangular 44.2%, vertical

24.2%, distoangular 15.8%, as shown by (Figure 3)

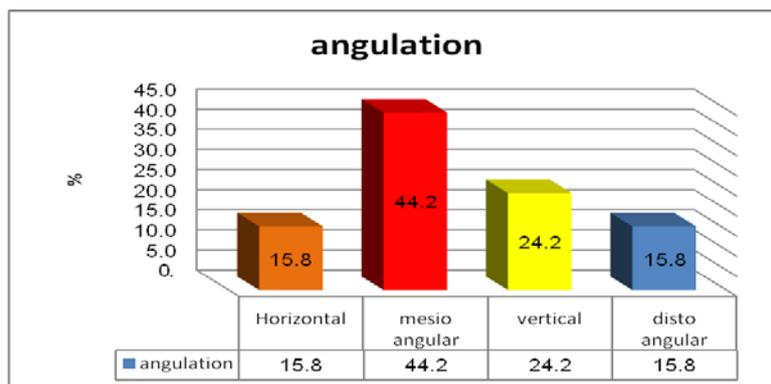


Figure (3): Distribution of angulation of impaction

In regard to levels position A 40%, position B 36%, position C 17%, as shown by (Figure 4)

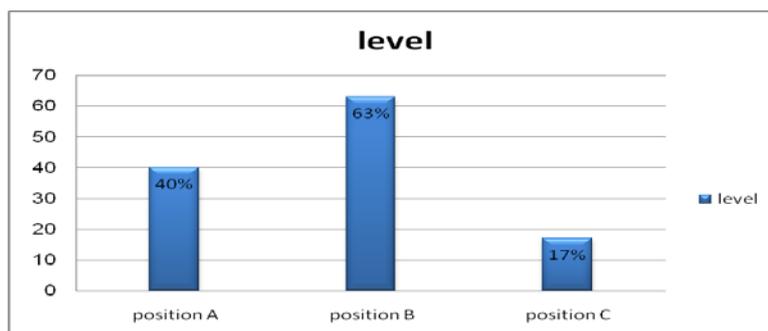


Figure (4): Distribution of the level of impactation

The mean time for the experienced surgeon was 23.33 minutes while for the non experienced 53.11 minutes. There was statistically highly significant difference

between the duration of the operation and the experience of the surgeon at P value=0.003. Figure (5)

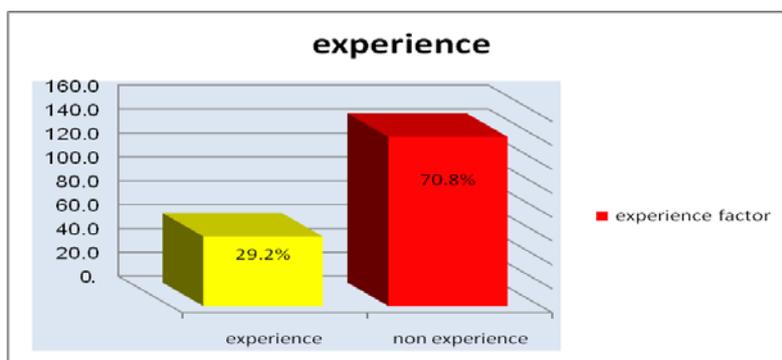


Figure (5): Distribution of experience

Showed distribution of experience. The relation between the time of the operation and class, level and angulations of impactation was statistically not significant. The chief complain , age , gender and mouth opening had no statistical effects on the difficulty and the duration of surgery in our study and this will be discussed.

DISCUSSION

To successfully evaluate the difficulty of lower third molar extraction prior to surgery, clinical and radiologic findings must be taken into account.⁽²⁰⁾ Not only does this help to correctly plan the operation, but it also increases patients' level of satisfaction with the treatment received. Several authors have attempted to evaluate this difficulty on the basis of the position of the molar in panoramic radio

graphs⁽¹⁴⁾ but it has since been demonstrated that these indexes are not reliable for this purpose^(16,20). Yuasa et al. proposed using a simpler index based on 3 factors: the depth of the third molar in the mandible, the relationship with the ramus/space available, and root width.⁽²¹⁾ We consider the scale to be a reliable, consistent measure of surgical difficulty and thus believe it can be considered a gold standard test as it has been found to be significantly associated with surgery time⁽¹⁸⁾. The level of agreement between preoperative and postoperative evaluation of extraction difficulty was slightly higher for dental oral and maxillofacial surgeons than for primary care dentists(junior surgeon) , possibly because the surgeons are more familiar with these procedures and have been better trained to predict the technique used (based on their own

skills).⁽¹⁹⁾ in our study we agree with Jose Barreiro et al.⁽²²⁾ in that predictive ability of surgical difficulty was highest for the group of oral and the maxillofacial surgeons than that of the primary care dentist or junior surgeon respectively, but the values in all cases were considerably lower than those reported by Macluskey et al.⁽²³⁾

Other factors that affect the difficulty in lower wisdom tooth like age , gender , cheek flexibility and mouth opening, all these factors according to Srinivas et al who indicate that errors in the estimates of difficulty were related to these factors with little or no dependence on radiographic variables or surgical experience⁽¹⁸⁾ and this disagree with our study as these mentioned factors by Srinivas et al had no statistical significant effects on the surgical difficulty and the duration of surgery in our work because all the patients in our study had normal range of mouth opening (39)mm and with mean age (24.5 years) which is regarded closer to the golden period for surgical removal of lower wisdom teeth (18- 20 years). The surgery is almost always less difficult to perform in younger age group than with older age group because the roots are usually completely formed and are thus longer, which requires more bone removal, and closer to the inferior alveolar canal, which increases the risk of postsurgical anesthesia and paresthesia, The follicular sac almost always degenerates with age, which makes the pericoronal space thinner; as a result, more bone must be removed for access to the crown of the tooth. Finally, there is increasing density and decreasing elasticity in the bone necessitating greater bone removal to deliver the tooth from its socket, A corollary of surgical difficulty is difficulty of recovery from the surgery. As a general rule, a more challenging and time consuming surgical procedure results in a more troublesome and prolonged postoperative recovery⁽²⁴⁾ so the shorter duration of surgery is important to decrease the possibilities of post operative unwanted sequel. There are several advantages for predicting the time that may be spent in the operation: One of the most important advantages is that when we know that certain operations may take a short time we

can decrease the amount of local anesthesia to that needed for simple extraction and this important from the economic view. This advantage is very useful for some patients and surgeon.⁽²⁵⁾ Moreover, when a lengthy period is to be expected preoperatively we may predict an increase in possible post-operative complications. Consequently, additional equipment, material, effort as well as special home care instructions may be needed and additional treatment and multi visits to treat the unwanted complications which may be affect both the surgeons and the patients .^(26, 27)

CONCLUSIONS

In regardless of type of difficulty index used in addition to local and general factors as a criteria for the assessment the difficulty of lower wisdom tooth extraction , we concluded that the factor of experience of the surgeon is the most important factor that have a significant effect on the duration of the surgery.

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