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Learning Curve in the Extraction of Impacted Lower Third Molars: A Prospective Cohort Study

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ABSTRACT

Introduction: Third molar removal is one of the most common surgical procedures in dentistry. Therefore, it is important to evaluate the learning curve of dentists undergoing surgical training. Thus, the aims of this study were to assess the performance of oral surgery residents in third molar extractions based on operative time and the occurrence of incidents/complications, and to determine which variables are associated with surgical difficulty.

Material and Methods: A prospective cohort study was carried out in adults requiring an impacted lower third molar extraction. All procedures were performed by residents of a master's degree in Oral Surgery and Implantology. The outcome variables were operative time and surgeon-reported difficulty. A descriptive, bivariate and multivariate analysis was performed.

Results: One hundred and 74 patients were operated on by six students. Similar performance was observed among the surgeons. Although a significant improvement in operative time was seen after 10 cases, a non-significant decreasing trend of incidents was also found. The multivariate analysis revealed an association between difficulty with crown/root sectioning and impaction against the second molar.

Conclusions: At least 10 lower impacted third molar extractions performed by postgraduate students with experience in tooth extractions are required to improve the operative time. Incidents seem to decrease slightly with the number of procedures performed. Surgical difficulty seems to be related to the need for crown/tooth sectioning and greater impaction against the second molar. Further studies are required to confirm these findings.

1 | Introduction

The learning curve is defined as the time and/or number of procedures required for a novice surgeon to be able to perform a given surgery autonomously and with a reasonable outcome. This is a process of skill improvement that was described by Wright in 1936 to evaluate the production line of aviation assemblies [1]. In recent decades, the term has been used in the medical field and specifically in studies evaluating minimally invasive surgical procedures [2]. Operative time and intra- and postoperative

complication rates are some of the parameters used to quantify the learning curve [3]. In addition, some hospital-based studies on surgeon learning evolution have used other outcome variables such as days of hospital stay [4] or the volume of blood loss during surgery [5]. Indeed, a well-trained surgeon will not only result in a lower biological cost to the patient but also reduce the economic cost to the healthcare system [6].

Lower third molar (L3M) extraction is a common procedure associated with varying degrees of surgical difficulty and risk

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