



Ultrasonic Surgery *versus* Conventional Surgery in Extraction of Impacted Mandibular Third Molars



Santander Totta

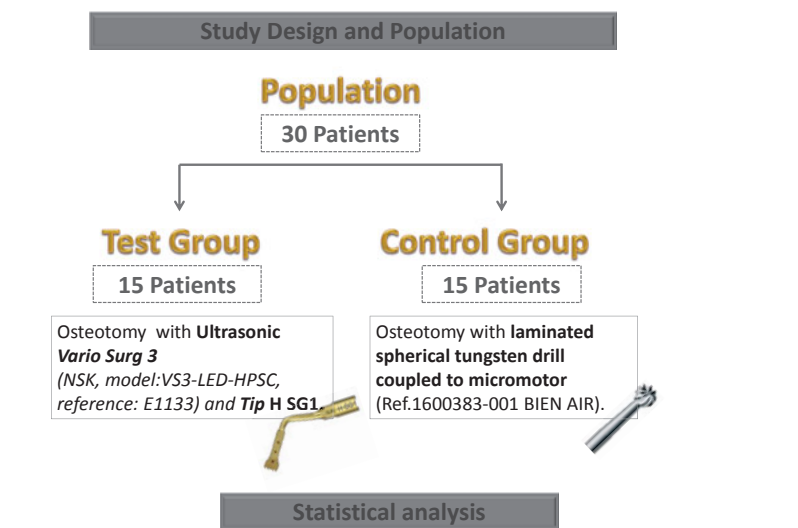
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I. INTRODUCTION

Impacted mandibular third molars extraction is one of the most frequent and delicate surgery that the dentist is faced in clinical practice^(1,2,3,4,5,6,7,8,9). Minimize post-operative, not interfering with the quality of life of patients is the major objective of the surgeon^(9,10). Thus ultrasonic surgery comes up as an alternative to osteotomy with conventional rotary instruments^(5,10).

III. MATERIALS AND METHODS



II. OBJECTIVES

Primary Objective

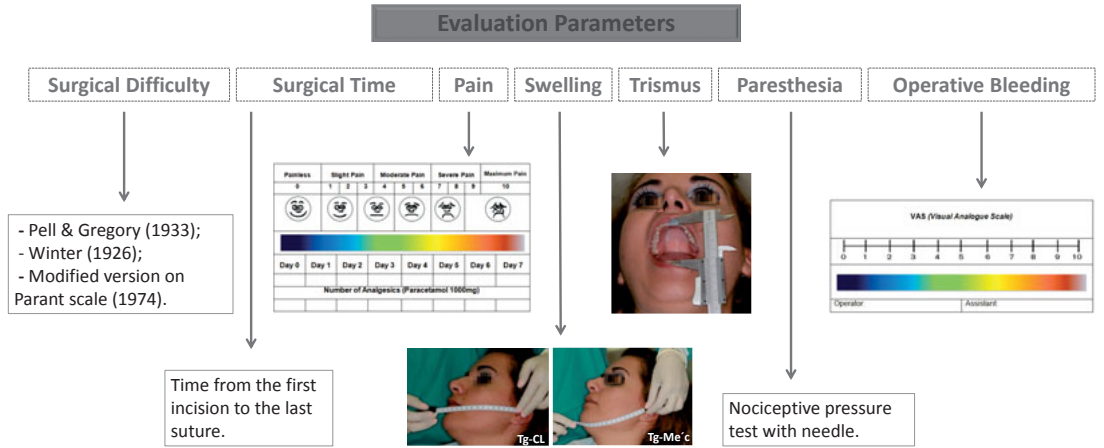
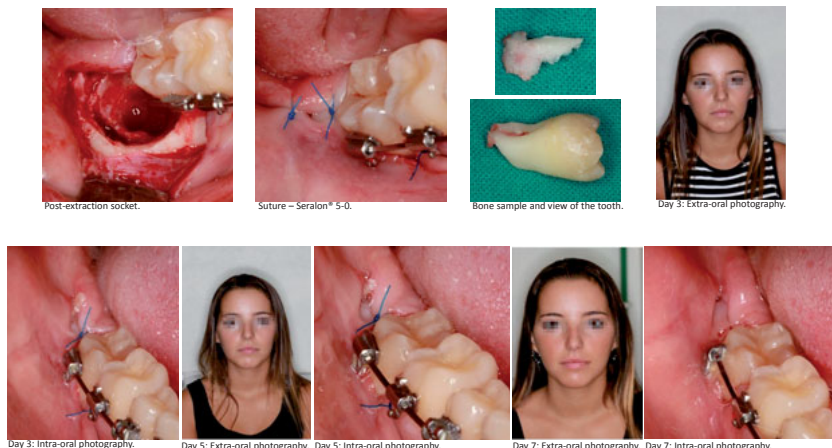
- Compare post-operative pain in extraction of impacted mandibular third molars using two surgical techniques: Ultrasonic Surgery or Conventional Surgery.

Secondary Objectives

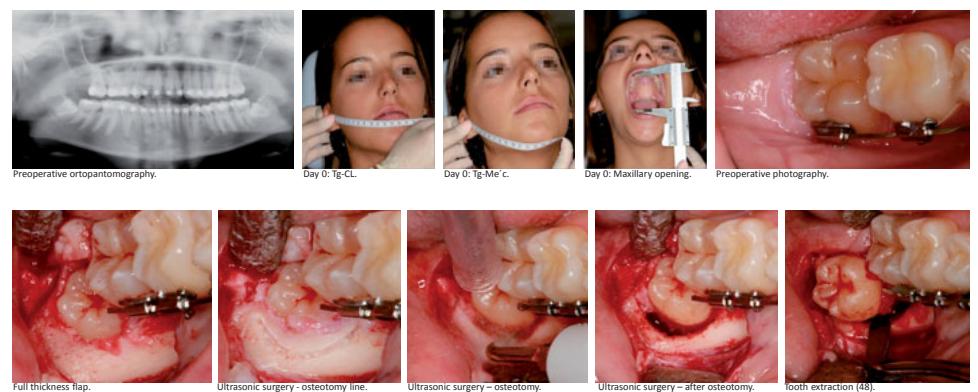
- Evaluate the influence of surgical difficulty in the operative time, according to the applied technique.
- Compare swelling, trismus, paresthesia and operative bleeding in the two surgical techniques.

| Variables | Statistical Tests |
|--|---|
| Sample Characterization: - Gender; - Age; - Homogeneity of groups. | - Student's <i>t</i> test for independent sample; - Fisher test. |
| Surgical Difficulty vs Surgical Time vs Surgical Technique | - Chi-square test by Monte Carlo simulation. |
| Surgical Time | - Chi-square test by Monte Carlo simulation. |
| Pain, Swelling, Trismus and Operative Bleeding | - Repeated measures ANOVA test. |

Statistical calculation program – IBM® SPSS® v20



Clinical Case – Ultrasonic Surgery



IV. RESULTS

| | Ultrasonic Surgery | Conventional Surgery |
|----------------------------|---|--|
| Surgical Difficulty | - Pell & Gregory: ++ Surg. Diff. → ++ Surg. Time Moderate Correlation - Modified version of the Parant Scale: ++++ Surg. Diff. → ++++ Surg. Time Stat. significant diff. | No Correlation +++ Surg. Diff. → ++++ Surg. Time Stat. significant diff. |
| Surgical Time | +++ No Stat. significant diff. | ++ |
| Pain | - VAS: ++ No Stat. significant diff. - Nº Analgesics: ++ No Stat. significant diff. | +++ |
| Swelling | - Tg - CL: ++ No Stat. significant diff. - Tg - Me c: ++ No Stat. significant diff. | +++ |
| Trismus | + No Stat. significant diff. | ++ |
| Operative Bleeding | + Stat. significant diff. | ++++ |

VI. CONCLUSIONS

1. Ultrasonic surgery tends to be advantageous for post-operative signs and symptoms (pain, swelling, trismus), although these differences are not statistically significant.
2. The greater the surgical difficulty, the longer the operative time, regardless of the applied technique.
3. Ultrasonic surgery is more time-consuming technique, but it has favorable post-operative results.
4. Operative bleeding is significantly lower with ultrasonic technique, given that the surgical intervention is less invasive it represents a systemic advantage for the patient.

V. DISCUSSION

Surgical Difficulty vs Surgical Time vs Surgical Technique

Pell & Gregory ≠ For Mantovani *et al.* (2014) the surgical time does not depend on the degree of inclusion or angulation of 3MM in both surgical techniques⁽³⁾.

Parant scale ≠ For Rullo *et al.* (2013) only statistically significant differences were observed for the ultrasonic technique, between stages II and III and IV of the Parant scale⁽¹³⁾.

Surgical Time vs Surgical Technique

≈ According to the meta-analyses of Al-Moraissi *et al.* (2016) and Jiang *et al.* (2015) the surgical time of ultrasonic surgery is significantly higher than that of conventional surgery^(15,16).

Pain vs Surgical Technique

VAS ≈ According to the meta-analysis of Al-Moraissi *et al.* (2016), pain levels are significantly lower in ultrasonic surgery⁽¹⁵⁾.

Nº Analgesics ≈ According Goyal *et al.* (2012) and Barone *et al.* (2010) studies the number of analgesics is significantly lower in the ultrasonic group^(2,10).

Swelling vs Surgical Technique

≈ According to the meta-analyses of Al-Moraissi *et al.* (2016) and Jiang *et al.* (2015), ultrasonic surgery induces a significantly lower edema than the conventional technique^(15,16).

Trismus vs Surgical Technique

≈ According to Al-Moraissi *et al.* (2016) and Jiang *et al.* (2015), ultrasonic surgery causes lower trismus, presenting statistical significance in the meta-analysis of Al-Moraissi *et al.* (2016)^(15,16).

Operative Bleeding vs Surgical Technique

≈ According to Sivoletta *et al.* (2011) operative bleeding is lower in ultrasonic surgery, however without statistically significant differences⁽¹⁾.

VII. CLINICAL IMPLICATIONS

Despite longer operative time and high equipment costs, the inherent advantages of the technique make its clinical applicability beneficial, especially in cases where maintenance of the integrity of the noble anatomic structures is the most relevant risk factor.

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