



Complications in the treatment of mandibular condylar fractures: Surgical versus conservative treatment[☆]

Iván García-Guerrero^a, Juan M. Ramírez^b, Rafael Gómez de Diego^c, José M. Martínez-González^{d,e}, María S. Poblador^b, José L. Lancho^{b,*}

^a School of Dentistry, Universidad Rey Juan Carlos, Avda. de Atenas s/n, 28922, Alcorcón, Madrid, Spain

^b Department of Morphological Sciences, School of Medicine, University of Córdoba, Avenida de Menéndez Pidal s/n, 14071 Córdoba, Spain

^c Universidad Alfonso X el Sabio, Avenida Universidad, 1, 28691 Villanueva de la Cañada, Madrid, Spain

^d School of Dentistry, Complutense University of Madrid, Spain

^e Department of Oral and Dental Implant Surgery at the Madrid University Hospital, Spain

ARTICLE INFO

Article history:

Received 31 May 2017

Received in revised form 7 October 2017

Accepted 11 October 2017

Keywords:

Bone

Mandible

Mandibular condyle

Fracture

Therapeutics

ABSTRACT

Objectives: In the present article, we aim to review the main intra- and post-operative complications associated with two different therapeutic approaches for treating mandibular condylar fractures: conservative (CTR) and surgical treatment (ORIF, Open Reduction and Internal Fixation).

Material and methods: We have carried out a retrospective, meta-analytic, observational study using literature review, covering the period between 2000–September 2017. The data obtained were processed using statistical software SPSS v.0.18 and R v.2.11.1. The chi-squared test was used for comparison of relative frequencies for independent samples.

Results: A total of 2458 patients with 2810 fractures were collected for study. Patients treated with CTR and ORIF were an average of 29 years old, of those treated with CTR, 72.37% and 27.63% were male or female respectively and, of those treated with ORIF, 70.36% and 29.64% were male or female respectively. The main complications suffered by CTR and ORIF patients were: asymmetry (10.2%/6.4%), residual pain (6.5%/5.6%), temporomandibular joint and articular imbalance (15.9%/10.3%) and malocclusion (11.1%/4.0%), respectively. We only found significant differences between CTR and ORIF in the number of cases of temporomandibular joint and articular imbalance and malocclusion.

Facial nerve damage was found exclusively among ORIF patients (8.6%) of which 8.3% were temporary and 0.3% permanent.

Conclusions: The complications associated with either technique are minimal and infrequent, resulting in successful outcomes with minimal morbidity. CTR are associated with complications deriving from delayed mobilization leading to functional limitation, whereas the main complication associated with ORIF treatment was facial nerve damage.

© 2017 Elsevier GmbH. All rights reserved.

Contents

1. Introduction.....	61
2. Materials and methods.....	61
2.1. Statistics.....	61
3. Results.....	61
4. Discussion.....	62
Funding.....	67

[☆] This paper belongs to the special issue Dentomaxillary.

* Corresponding author.

E-mail addresses: drigarciaaguerrero@gmail.com (I. García-Guerrero), jmramirez@uco.es (J.M. Ramírez), rgd6467@movistar.es (R. Gómez de Diego), hospimar@hotmail.com (J.M. Martínez-González), cm1pofem@uco.es (M.S. Poblador), cm1laalj@uco.es (J.L. Lancho).

Ethical approval.....	67
References	67

1. Introduction

The incidence of mandible fractures in the condylar region is high, representing 10–40% of all maxillofacial fractures (Sawazaki et al., 2010). It has been reported that therapeutic methods used to treat these fractures produce satisfactory and functional outcomes (Marker et al., 2000). Despite these good results, the choice between a conservative treatment (CRT) or a surgical approach, open reduction and internal fixation (ORIF) remains a controversial topic (Gerbino et al., 2009).

One of the main advantages of CRT treatment is the elimination of the risks involved in any surgical intervention. Nevertheless, the results are often compromised mainly due to incorrect repositioning of the fractured segments sometimes accompanied by complications such as chronic residual pain, articular and/or occlusal imbalance, ankylosis caused by prolonged immobilization or facial asymmetry resulting from shortening of the mandibular ramus (Choi et al., 2005; Thorén et al., 2001).

On the other hand, ORIF presents all the risks of any surgical procedure, such as hemorrhage, infection, neurological or esthetic risks (arising from residual scarring). ORIF treatment also requires professionals with higher levels of skill and training (Eckelt et al., 2006; Jensen et al., 2006). However, ORIF offers considerable advantages: it leads to a better reduction and repositioning of the fractured fragments with an immediate mobilization, and early recovery which circumvents many of the residual complications of CRT (Lindahl, 1977).

The aim of this review is to determine the intra- and post-operative complications associated with these two approaches for treatment of condylar fractures helping clinicians to take a better decision between CRT or ORIF approaches.

2. Materials and methods

A retrospective, meta-analytic, observational study was carried out reviewing publications included in the Pubmed or held in the libraries of the Universidad Complutense and the Rey Juan Carlos I University both of Madrid, published during 2000– September 2017. Key terms used were mandibular condyle, fractures, bone, mandible and therapeutics.

Inclusion criteria were: (i) Retrospective, prospective, multi-center and single-center studies dealing with mandibular condylar fracture and its treatment by one or both treatment approaches; (ii) Published within the 2000– September 2017 in either Spanish or English; (iii) including a minimum of ten patients and a post-treatment follow-up period of at least six months (iv) pediatric studies have also been included.

The search identified a total of 93 articles of which 42 fulfilled the inclusion criteria, comprising a total of 2458 patients with 2810 mandibular condylar fractures (Table 1). The literature selection process is summarized in a flowchart following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guide (Fig. 1) as previously reported (Liberati et al., 2009).

The variables evaluated in the study were asymmetry, pain, facial nerve damage, temporomandibular articulation (TMA), malocclusion, maximum mouth opening (MMO) and Others Complications (Table 1).

2.1. Statistics

The data obtained were processed using statistical software SPSS[®] v.0.18 and R v.2.11.1. A descriptive statistical study was performed. Chi-squared test was used for estimation and comparison of relative frequencies for independent samples, and T-test to compare differences of MMO between CRT and ORIF treatment. A $p < 0.05$ was considered as statistically significant.

3. Results

The average age of patients undergoing CRT and ORIF was 26 ± 7.88 and 31 ± 7.44 years respectively. Regarding the sex of patients, men predominated for both treatments, being 72.37% and 70.36% for CRT and ORIF respectively, whereas women represent 27.63% for CRT and 29.64% for ORIF.

One of the most common condylar fracture classification systems is the one used by Lindahl (1977) that classifies fractures according to their lengthwise location on the condyle, but does not include information about the extent of displacement; no studies classified fractures as intra- or extra-capsular. Subcondylar fractures were the most frequent (61%) followed by neck fractures (25%) and finally intracapsular fractures (14%) (Table 1). Bilateral fractures were found in 26 of the 45 studies, making a total of 371 fractures. In our review, 38% of the studies (17/45) included cases of concomitant fractures associated with mandibular condyle fracture, adding up to a total of 696 fractures (Table 2).

The minimum post-treatment follow-up demanded by our inclusion criteria was six months. The average follow-up time in the identified studies was 33 months (Table 2).

In spite of few articles dealing with asymmetry, incidences of this complication were found with either treatment. There were 46 patients with asymmetry compared to 59 for CRT and ORIF respectively, with a relative frequency of 10.2% (CRT) and 6.4% (ORIF) (Fig. 2, Table 3). This result points out that there may be a trend toward fewer asymmetry cases in ORIF patients compared with CRT, but this does not reach statistical significance ($p = 0.057$).

A pain variable was included in 55% (25/45) of the studies reviewed. The number of patients experiencing pain from palpation, movement or as post-treatment chronic pain resulting from ORIF were 59 compared with 46 following CRT, with similar relative frequencies ($p = 0.44$) of 6.5% for CRT and 5.6% for ORIF (Fig. 2, Table 3).

Another of the complications resulting from condylar fracture treatment was alteration of temporomandibular joint balance (TMA) on the fracture side, manifested as a clicking jaw movement which was reported in 40% (18/45) of the studies reviewed (Fig. 2, Table 3). Thus, CRT patients present significantly ($p = 0.015$) more TMA cases (15.9%) than ORIF patients (10.3%). Of note, we did not find significant differences ($p = 0.877$) in the average of maximal mouth opening (Fig. 2, Table 3) undergoing CRT (41.57 ± 5 mm) and ORIF (41.38 ± 3.45 mm).

Regarding malocclusion, 37% (17/45) and 60% (27/45) of studies reported on this complication in CRT and ORIF approaches respectively. Malocclusion was significantly ($p < 0.001$) more frequently reported in CRT (11.1%) than in ORIF patients (4.0%) causing functional limitations in most of the cases (Fig. 2, Table 3).

We exclusively found nerve affection in ORIF patients, in particular at the facial nerve branches in the retromandibular area. Thus, the relative frequency of nerve affection in ORIF patients

Download English Version:

<https://daneshyari.com/en/article/8460350>

Download Persian Version:

<https://daneshyari.com/article/8460350>

[Daneshyari.com](https://daneshyari.com)