Subcondylar Mandible Fractures: A Review and Analysis of Outcomes

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ABSTRACT

Fractures involving the mandibular condyle occur in approximately 25% to 35% of all mandible fractures. There is significant controversy regarding the treatment of condylar mandible fractures. There has been a long-standing preference for closed treatment, requiring a period of immobilization and restriction. Other potential treatment options include conservative treatment or open reduction and internal fixation (ORIF).

Conservative treatment can be considered in patients with no complaints of malocclusion and no radiographic evidence of displacement. Reasons cited in the literature to pursue open treatment include loss of facial height, position of the fractured condyle, and severity of displacement or dislocation. Proponents of open treatment endorse anatomic repositioning and immediate movement of the jaw as justification for open reduction. Potential complications of treatment of subcondylar mandible fractures include static and dynamic pain, infection, malocclusion, open bite, deviation of mandible with opening, temporomandibular joint problems, malunion, facial numbness or weakness.

While many complications associated with facial injury are transient, some can become permanent impairments. These can affect overall quality of life. It has become increasingly common to consider a broader construct of health, including the perspective of the patient as equally important element to measure surgical success. It is critical when evaluating surgical outcomes to consider the patient’s subjective problems and symptoms as well as objective measurements of success.

This study combines both complications reviewed in the medical record and patient’s observations. The purpose of this study is to report outcomes of not only isolated subcondylar mandible fractures but also subcondylar fractures with additional mandible and facial fractures.

METHODS AND MATERIALS

Cases were selected from medical records of patients diagnosed between June 2001 and September 2009 with subcondylar mandible fractures at Hennepin County Medical Center (HCMC), Minneapolis MN. The study was conducted with approval from the HCMC Human Subjects Research Committee, which serves as the institutional review board. Charts were selected based on codes from the ninth revision of the International Statistical Classification of Diseases (ICD-9). The ICD-9 codes used to identify patients were: 802.21 (closed fracture of condylar process of mandible), 802.22 (closed fracture of subcondylar process of mandible), 802.31 (open fracture of condylar process of mandible), and 802.32 (open fracture of subcondylar process of mandible).

The final study population consisted of 303 cases. These patient’s medical records were reviewed in detail. All 303 patients were included in the post treatment questionnaire. The questionnaire was mailed twice with the second questionnaire including a small monetary incentive to increase survey completion. The questionnaire consisted of 15 questions using a four point rating scale. Topics addressed included jaw range of motion, jaw movement, occlusion, function, dietary restrictions, appearance, temporomandibular joint problems, treatment complications, pain, swelling, instability, dynamism, and overall satisfaction with rate of recovery and treatment.

INTRODUCTION

The treatment of subcondylar mandible fractures remains controversial. Historically the most accepted method of treatment is mandibulomaxilofixation. Conservative treatment is generally considered in patients with preexisting occlusion and lack of displacement on imaging studies. Open reduction and internal fixation has gained popularity with improvement in plating materials and refinement of surgical technique. The literature advocates subcondylar fractures with significant dislocation and displacement of fracture fragments. In our study the most common treatment method was closed treatment in both patients with isolated subcondylar fractures and multiple fractures.

RESULTS

Ninety three patients had isolated subcondylar mandible fractures. The remaining 207 suffered a subcondylar mandible fracture and either an additional mandible fracture or a concomitant facial fracture. One hundred and fifty one patients (72.9%) were diagnosed with a subcondylar fracture and an additional fracture of the mandible. The most common additional mandible fractures were the symphysis and parasymphysis with 52 (25.1%) and 51 (24.6%) fractures respectively. Five (14.4%) patients sustained a concomitant fracture of the body of the mandible.

There were three broad categories of mechanisms of injury were identified: physical altercation, motor vehicle crash and fall. In the isolated subcondylar mandible fracture group 40 patients (43%) suffered a fall, 38 patients (41%) sustained their injury due to physical altercation, and 10 (5%) were involved in a motor vehicle crash. In comparison, the group with multiple fractures, 98 patients (47%) were involved in physical altercation, 52 patients (25%) sustained their fractures in a fall and 47 (23%) were in a motor vehicle crash.

Treatment groups were defined as conservative, closed or open treatment. In the isolated subcondylar mandible fracture group, 38 patients were treated conservatively, 43 patients underwent closed treatment and 12 patients underwent open treatment. For patients in the multiple fracture group, the subcondylar mandible fracture was treated conservatively in 25 patients. Closed treatment was utilized in 134 (67%) of cases and open reduction fixation was used in 37 underwent open treatment.

Post treatment complications were documented for isolated subcondylar mandible fractures. Three patients with isolated subcondylar mandible fractures complained of malocclusion. Jaw deviation was documented in ten patients. Dietary restriction was observed in 20 patients. Five of these 20 patients had documented noncompliance with treatment. One patient complained of restricted jaw range of motion. One patient had facial numbness and another had facial weakness.

Complications for patients with multiple fractures were reviewed. One patient complained of persistent pain. Nine patients endorsed malocclusion. Two patients reported decreased jaw range of motion. Another two patients had documented jaw deviation on opening. Four patients had facial numbness of physical exam and 3 patients had facial weakness. Patients with facial weakness were improving on their follow up visit clinic. The average length of follow up for the patients with isolated subcondylar mandible fractures was 90 days. The average length of follow up for the patients with multiple fractures was similar at 92 days.

All patients were mailed a 15 question survey to evaluate treatment results. The questionnaire used a four point rating scale of strongly agree, agree, disagree and strongly disagree. Sixty eight questionnaires were received for analysis. The completed questionnaires were evaluated by treatment groups; 13 patients in the conservative group, 36 patients in the closed treatment group and 18 in the open treatment group. The results of the study are graphically represented below.

CONCLUSIONS

Results from the returned questionnaires showed overall satisfied with their postoperative range of motion, function, appearance, and occlusion. Patients overall did not suffer from problems with the temporomandibular joint. Patients did endorse both static and dynamic pain, however the overall pain scale rating in most patients was low. Overall patients were satisfied with their post treatment results. Ongoing analysis is needed to determine relationship of imaging to treatment options and outcomes based on displacement.