Subcondylar Fractures

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KEYWORDS

• Subcondylar fracture • Mandible fracture • Facial fracture • Surgical techniques
• Open surgical technique • Closed surgical technique • Mandible maxilla

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Edward Ellis III, Robert M. Kellman, and Emre Vural address questions for discussion and debate:

1. Are there specific indications for open versus closed treatment of subcondylar fractures? Are there any contraindications to open treatment, and do they supersede the indications for open treatment?
2. Does the presence of other fractures (mandible and/or midface) affect your choice of open versus closed treatment? (Is the selection of closed vs open treatment the same for unilateral vs bilateral fractures?)
3. If one chooses to perform closed treatment, how long a period of maxillomandibular fixation is required?
4. What are the most important factors for success when closed treatment is used?
5. What is the best surgical approach to open reduction and internal fixation of subcondylar fractures?
6. *Analysis:* Over the past 5 years, how has your technique or approach evolved and what is the most important thing you have learned/observed in working with subcondylar fractures?

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ELLIS

I applaud this debate because I believe it is time we stopped arguing about whether condylar fractures should be treated open or closed, and instead ask which condylar fractures might have better outcomes when treated open.

I find it pejorative to come up with specific "indications" for open or closed treatment. I prefer to use the term "considerations," for which there are many. I can think of only 1 situation in which I believe open treatment should almost always be

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Facial Plast Surg Clin N Am 20 (2012) 365–382
doi:10.1016/j.fsc.2012.05.002
1064-7406/12/$ – see front matter

used, and it is addressed later (condylar fractures associated with comminuted maxillary fracture[s]). However, there are other considerations that may push one toward one treatment or the other and I address these now.

However, to fully understand condylar fractures, one has to understand the adaptations in the masticatory system that occur when these injuries are treated closed or open. I refer readers to an article on this topic by Ellis and Throckmorton.[2]

First, I believe that any unilateral condylar fracture can be treated closed, with the following prerequisites:

1. The patient must have a good complement of teeth, especially posterior teeth. Without them, there is a significant loss of posterior vertical dimension and an increase in the mandibular and occlusal plane angles. The loss of posterior vertical dimension makes future prosthetic reconstruction difficult.
2. The patient must be cooperative. They must wear their elastics, do their functional exercises, and return often for follow-up.
3. The surgeon must be willing to see the patient often to assess treatment and alter functional therapy as necessary.

It does not matter to me whether the unilateral condylar fracture is intracapsular, condylar neck, or subcondylar. Nor does the degree of displacement matter to me. (It does not matter to me if there is a condyle. Unilateral condylectomy patients can readily be treated nonsurgically with excellent outcomes.) They can all be managed effectively if the criteria listed earlier are met. However, one must understand completely that, when one chooses closed treatment, especially those with large displacements, the neoarticulation does not translate as much as the nonfractured side. The consequence of this situation in the skeletally mature patient is that they often deviate toward the side of fracture when the mouth is opened (see **Fig. 1**A in the techniques section) and they have limited lateral excursion away from the side of fracture (**Fig. 1**).[3–5] When they protrude their mandible, they also deviate toward the side of fracture. This deviation is not a failure of treatment; it is a consequence of the alteration in biomechanics secondary to the displaced condyle and the altered lateral pterygoid function. It is of no clinical consequence to the patient. That is not to say that patients treated open for unilateral condylar fractures do not do well. They usually do well, assuming that no injuries occur from the surgery to reduce and stabilize the condyle. However, one has to consider the risk/benefit ratio when deciding on treatment. If one can obtain a good occlusion, good facial symmetry, and pain-free function by treating someone closed, why should they risk the potential intraoperative and postoperative complications that are associated with open treatment?[1]

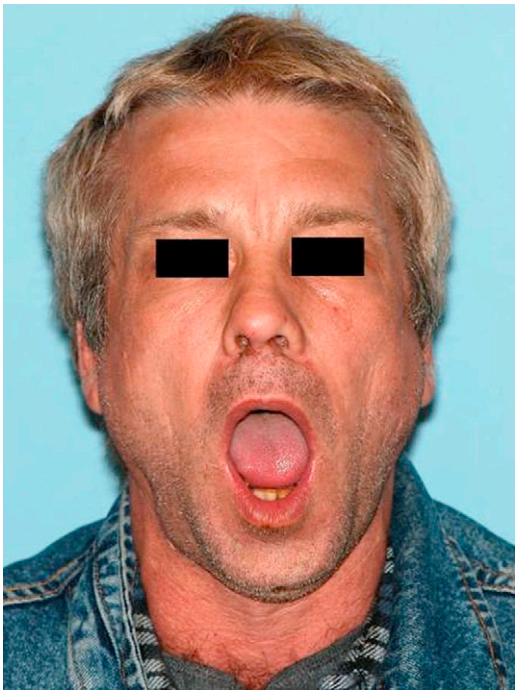

Fig. 1. A patient treated closed for a left condylar process fracture. Note the deviation toward the side of fracture.

Unlike the unilateral condylar fracture, I do not believe that I can satisfactorily treat all bilateral condylar fractures closed. Some have good outcomes; some do not. The problem is that I cannot predict which ones will do well with closed treatment and which will not. The bilateral condylar fracture, especially those that are displaced, creates a biomechanical alteration that is a challenge to the masticatory system. Bilateral loss of vertical and horizontal support from disruption of the craniomandibular articulation means that the mandible is essentially a free-floating bone, positioned only by the muscles and ligaments attached to it, and the dentition.[1,6,7] Some patients have the neuromuscular ability to adapt to the alteration in biomechanics and others do not. A successful outcome requires the muscle coordination to be such that the patient can carry the mandible in the proper position while a new craniomandibular articulation is established. The reestablishment of a new articulation always occurs. The only question is whether the mandible will be in a favorable position at the conclusion of the process by which