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Technical Refinements and new Instruments for the transoral endoscopic assisted open Treatment of condylar Fractures

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Introduction

Refinements of instruments and surgical technique facilitates the endoscopic assisted reduction and miniplate fixation of condylar mandible fractures. The endoscopic assisted treatment of dislocated condylar fractures by limited transoral incision was performed at the University Hospital Freiburg from February 2000 to January 2002. In 12 consecutive patients endoscopic assisted reduction and fixation of dislocated condylar fractures was performed using a prototype set of instruments (Synthes, Paoli, USA, AO Development Institue, Davos, Switzerland) (Fig.1, 2).

Figure. 1a, b: Curved elevator

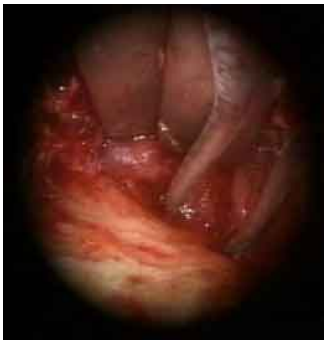

Fig. 1c:
Pliers (Fig. 1c,d) for retrieving and reduction of dislocated condylar fragment.

Fig. 1d

Fig. 2:
Prototype set of instruments designed for endoscopic assisted open treatment of condylar fractures (Synthes, Paoli, USA).

Material and Methods

Intraoperatively anatomic reduction was controlled endoscopically at the cranial and posterior border of the ascending ramus (Fig.3). Due to bone loss at the fracture side or reduced dentition postoperative IMF was performed for five days in four patients. In eight out of the12 patients intermaxillary fixation (IMF) was not performed.

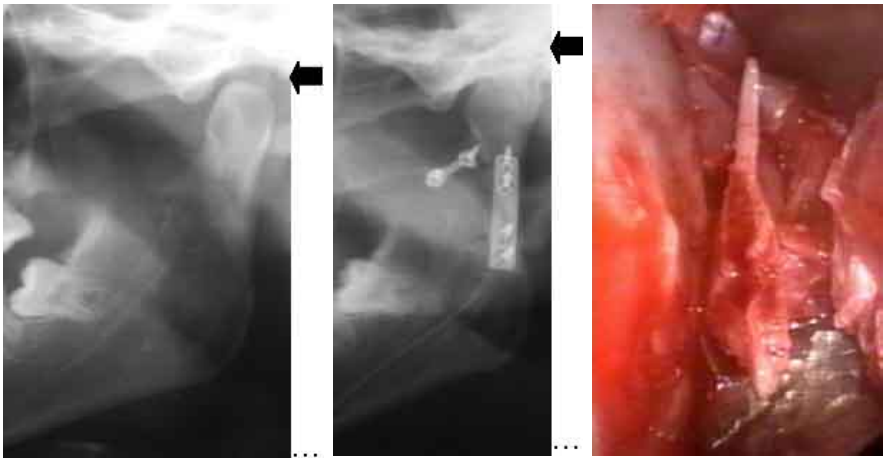

Fig. 3a,b,c:
Pre- and postoperative panoramic radiographs and endoscopic view of the fracture site demonstrate the degree of dislocation with shortening of the ascending ramus, and restoration of the vertical height after open reduction and osteosynthesis.

Fig. 3d:
Limited intraoral incision were used for the endoscopic assisted treatment.

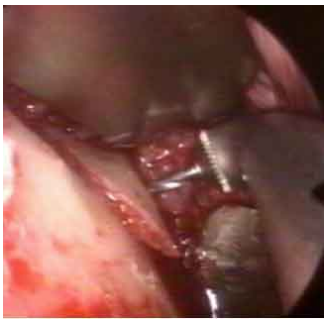

Fig. 3e:
Open reduction and fixation was performed using angulated drill and screw driver without transbuccal step incision.

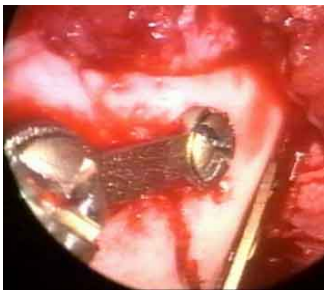

Fig. 3f:
Intraoperatively anatomic reduction was controlled endoscopically at the cranial aspect and in another patient at the dorsal aspect of the ascending ramus.

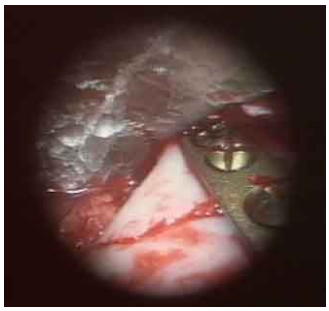

Fig. 3g

Results

The mean operating time for transoral reduction of dislocated condylar fracture without IMF was 1 h 50 min. Anatomic reduction and uneventful healing were noted clinically and by postoperative radiographs. There were no signs of malocclusion in the group of eight patients without IMF. Good postoperative function and mouth opening without deviation and limitation on lateral extrusion was noted 4 weeks after surgery in all 12 patients. The endoscopic assisted transoral approach proved to be a reliable surgical method for the treatment of dislocated condylar fractures. In-struments designed for condylar fracture treatment facilitated the open management of the condylar fractures.

Literature

Chen C.-T., Lai J.-P., Tung T.-C., Chen Y.-R.: Endoscopically assisted mandibular subcondylar fracture repair. Plast Reconstr Surg 103:160-65, 1998
Schön R, Gutwald R, Schramm A, Gellrich N-C, Schmelzeisen R.: Endoscopic assisted open treatment of condylar fractures of the mandible. Extraoral versus intraoral approach. Int J Oral Maxillofac Surg 31;3:237-243, 2002
Schön R, Schramm A, Gellrich N-C, Schmelzeisen R: Follow up of condylar fractures of the mandible in 8 patients 18 months after transoral endoscopic assisted open treatment. J Oral and MaxilloFac Surg (accepted 2/2002)

This Poster was submitted by MDS, DDS Ralf Schön.

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Poster Faksimile:

TECHNICAL REFINEMENTS AND NEW INSTRUMENTS FOR THE TRANSORAL ENDOSCOPIC ASSISTED OPEN TREATMENT OF CONDYLAR FRACTURES

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Refinements of instruments and surgical technique facilitates the endoscopic assisted reduction and miniplate fixation of condylar mandible fractures. The endoscopic assisted treatment of dislocated condylar fractures by limited transoral incision was performed at the University Hospital Freiburg from February 2000 to January 2002. In 12 consecutive patients endoscopic assisted reduction and fixation of dislocated condylar fractures was performed using a prototype set of instruments (Synthes, Paoli, USA, AO Development Institue, Davos, Switzerland) (Fig.1, 2). Intraoperatively anatomic reduction was controlled endoscopically at the cranial and posterior border of the ascending ramus (Fig.3). Due to bone loss at the fracture side or reduced dentition postoperative IMF was performed for five days in four patients. In eight out of the12 patients intermaxillary fixation (IMF) was not performed.

Fig.1a: **Fig.1b**

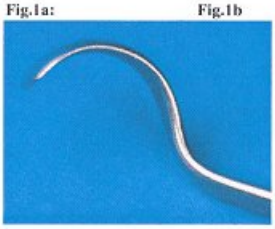
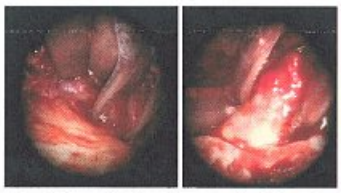


Figure. 1: Curved elevator (Fig.1a-b) and pliers (Fig. 1c,d) for retrieving and reduction of dislocated condylar fragment.

Figure 2: Prototype set of instruments designed for endoscopic assisted open treatment of condylar fractures (Synthes, Paoli, USA).

Fig.1c **Fig.1d** **Fig.2** **Fig.3a** **Fig.3b** **Fig.3c**



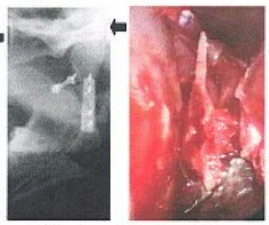


Figure 3: Pre- and postoperative panoramic radiographs and endoscopic view of the fracture site demonstrate the degree of dislocation with shortening of the ascending ramus, and restoration of the vertical height after open reduction and osteosynthesis (Fig.3a, b, c). Limited intraoral incision were used for the endoscopic assisted treatment (Fig.3d). Open reduction and fixation was performed using angulated drill and screw driver without transbuccal step incision (Fig.3e). Intraoperatively anatomic reduction was controlled endoscopically at the cranial aspect and in another patient at the dorsal aspect of the ascending ramus (Fig.3f, g). A prototype of a 2.0mm AO 4 hole plate was used at the posterior aspect of the ascending ramus (Fig.3b, f).

Fig.3d **Fig.3e** **Fig.3f** **Fig.3g**

The mean operating time for transoral reduction of dislocated condylar fracture without IMF was 1 h 50 min. Anatomic reduction and uneventful healing were noted clinically and by postoperative radiographs. There were no signs of malocclusion in the group of eight patients without IMF. Good postoperative function and mouth opening without deviation and limitation on lateral extrusion was noted 4 weeks after surgery in all 12 patients.

The endoscopic assisted transoral approach proved to be a reliable surgical method for the treatment of dislocated condylar fractures. Instruments designed for condylar fracture treatment facilitated the open management of the condylar fractures.

Acknowledgement:

Besides the authors the special instruments for the reduction of condylar fractures have been developed together with Hamel R (Synthes® Paoli, PA, USA), Buescher P (ADI, AO Development Institute, Davos, Switzerland) and the ENT-, Plastic- and Oral Maxillofacial Surgeons of the Minimal Invasive Subcondylar Group: Baker A (Derbyshire, GB), Buchbinder, D (New York, USA), Indresano T (Milwaukee, USA), Kellman RM (Syracuse, USA), Lee C (San Francisco, USA), Mueller R (Portland, USA), Schmitz JP (San Antonio, USA), Schubert W (St.Paul, USA), Troulis M (Boston, USA), Wagner J (Albuquerque, USA).

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