Modification of Heister Jaw Opener

Seema Dengra¹ · Vaibhav Tiwari² · Nidhi Sharma³

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Abstract Heister introduced a mouth gag of incentric pattern which is still being used. Heister jaw opener has narrow blades which rest on the occlusal surface of molar teeth. The force of mouth gag is not equally distributed on all the teeth, therefore there is great risk of tooth avulsion in periodontally compromised dentition and fracture of tooth while using standard Heister appliance. To overcome this modification of Heister mouth gag is done.

Keywords Heister jaw opener · Mouth gag · Periodontally compromised teeth · Incentric forceps

Introduction

Heister in 1714, introduced a mouth gag of incentric pattern which is still being used. It consists of two flat and narrow blades which rest on the occlusal surface of molar

teeth, with an incentric pivot and plain short handle [1]. Mouth gags aim to enlarge physiologic channels briefly avoiding permanent changes to cartilaginous constraints of mandibular joints [2].

In 1902, Colt analyzed the defects in previous mouth gags to achieve a scientifically designed instrument, after statistical analysis of measurements made on 500 patients [3]. He added anesthetic tubes to the jaws and maintained that Coleman's dental gag of 1861 was the origin of subsequent mouth gags [4]. Typically, the limbs of incentric forceps engage but do not cross at the pivot, dictating that closure of the handles separates the jaws, as in the case of retractors or dilators [2]. Mouth gags, mouth openers are characterized by plain handles to accommodate the power of palmar pressure [2]. As suggested by the jaw ratios [2] (Table 1), handles are relatively short averaging less than half an instrument's length in contrast to their centric pivoting cousins.

The force of Heister mouth gag while using is not equally distributed on all the teeth, therefore there is great risk of tooth avulsion in periodontally compromised dentition and fracture of tooth.

To overcome this we decided to modify the Heister mouth gag by adding two broad plates in the blades. Plates have smooth surface and blunt edges to be atraumatic to teeth and soft tissues. Out of two plates, one plate rests on maxilla which is immovable and the other plate rests on the mandible which moves as the jaw opens (Figs. 1, 2). The modified Heister mouth gag was used in the patients and the advantages of these plates, which rest on all teeth is that it results in equal distribution of forces across the dentition thereby preventing concentration of force in one tooth while opening the mouth thus excluding the risk of avulsion of tooth in periodontally compromised dentition and minimizing the risk of tooth fracture.

✉ Seema Dengra
seema_dengra@yahoo.co.in

Vaibhav Tiwari
cybervt1@yahoo.co.in

Nidhi Sharma
dr.nidhisharma@yahoo.com

¹ Department of Oral and Maxillofacial Surgery, Government Dental College, Raipur, Chhattisgarh, India

² Department of Periodontics, Government Dental College, Raipur, Chhattisgarh, India

³ Department of Oral Pathology, Government Dental College, Raipur, Chhattisgarh, India

Table 1 Incentric forceps analysed by length and jaw/length ratio from scale drawings, Down Bros. catalogue, 1952–1955

Instrument	Average number (N)	Length (cm)	Jaw (cm)	Ratio (%)
Dilators	4	17.1	6.7	39.1
Mouth gags				
Adult	7	18.0	7.4	40.9
Child	3	14.4	5.6	38.9
Retractors				
Large	12	20.9	12.1	57.7
Small	11	16.2	9.6	59.2
Specula				
Nose and ear	5	14.8	5.5	37.3

Fig. 1 Modified Heister mouth gag **Fig. 2** Photograph showing placement of modified Heister mouth gag

Conflict of interest None.

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