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Stop-safety device for temporomandibular joint arthroscopy

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Arthroscopy of the temporomandibular joins (TMJ) is a minimally invasive, effective procedure for treatment of intra-articular changes of TMJ and which has been increasingly used by maxillo-facial surgeons worldwide. Nevertheless, despite being a closed surgical procedure, the rate of accidents and complications in the trans-operative period is of approximately 7.71 per cent, according to a systematic review study of 11,000 joints treated with this method [1].

There may be several causes of accidents and complications in the TMJ arthroscopy procedures, with blind insertion of the arthroscope and working portal without direct visualisation of the interior of the joint being important risk factors, as disruption of the medial wall of joint may occur and lead to problems such as extravasation of fluid into the oropharyngeal region and possible impairment of the airways, vascular injury to the meningeal artery, intra-cranial haemorrhage, injury to the 5th pair of cranial nerve, with consequent paresthesia, among other complications [2,3].

In order to prevent these injuries to anatomical structures from occurring at the moment of inserting instruments into the joint, the literature [4,5] recommend that the distance should never be more than 25 mm without direct visualisation of the joint through the arthroscope. However, this is not always easy because there is no physical obstacle as a barrier, although some instruments have distance marks on their cannulas.

In this way, the idea of the stop-safety device is precisely to create a low-cost auto-clavable blocking instrument interchangeable with different types of arthroscopes and working portals to avoid them to exceed the safe distance of 25 mm.

The proposed stop-safety device was made with sterilisable highly resistant plastic material and can be fitted to several types of arthroscopes and working portals through a lateral slot, in which the safe distance is defined and maintained by tightening a screw inside the device (Figs. 1 and 2).

The distance is defined in the safety device with the help of a sterile ruler and the insertion of the arthroscope into the joint is performed with the device, and after checking whether it is within the joint, it is easily removed on the lateral side by untightening the screw (Figs. 3 and 4).

It is expected that this stop-safety device can be routinely used in TMJ arthroscopy procedures, thus minimising the likelihood of accidents and complications at the moment of inserting instruments into the joint.

Ethics statement/confirmation of patients' permission

Not applicable.

Author contribution

Fábio R. L. Sato: Conception and design of study/review/case

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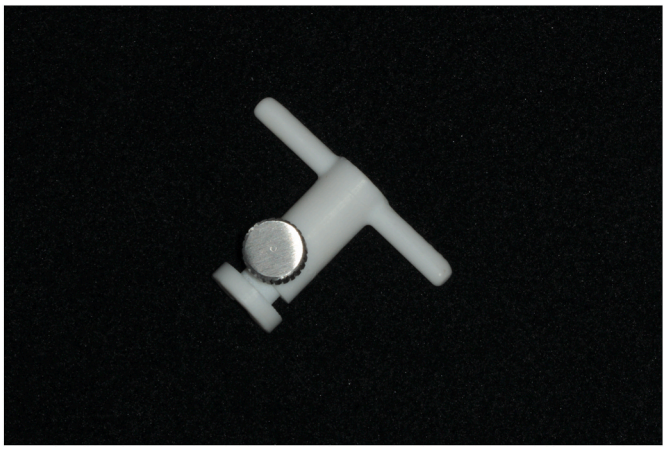

Fig. 1. – Safety device closed without depth measurement.

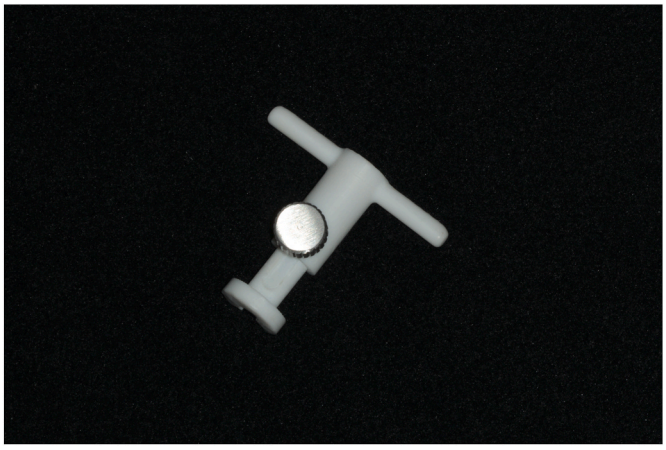

Fig. 2. Safety device locked with depth measurement.

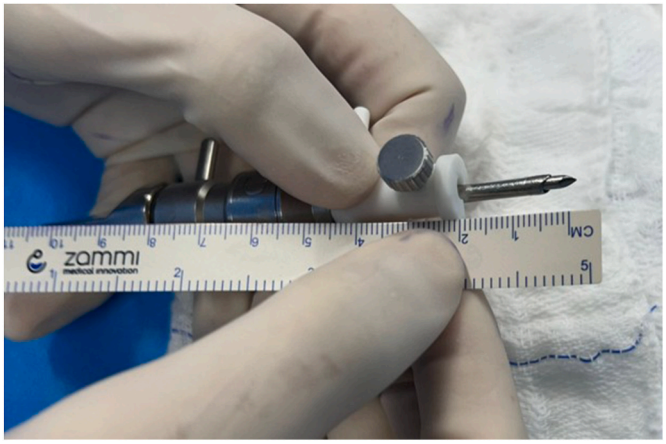

Fig. 3. Setting the safety distance on the device.

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Fig. 4. Trocar insertion with the safety device.

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Conflict of interest

We have no conflicts of interest.

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