

Dynamic Arthroscopic Testing: False Positives and False Negatives

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This chapter is a short technical note which completes the ‘Application of wrist arthroscopy to the study of intrinsic ligaments’ written by Gilles Dautel. It aims at quantifying the causes of false positives and false negatives during the dynamic testing of scapho- and pyramidolunate instabilities at the midcarpal space.

1 False Positives

In these situations, the arthroscopic dynamic testing tends to overestimate the score of severity of a scapho- or triquetrolunate instability.

1.1 The Examining Hook and the Optic

Although it can seem trivial, an undersized examining hook can engender a misinterpretation of the testing. It becomes impossible to make real dynamic testing if the hook is too thin and its tip small. The examining hook should be 2 mm thick and the tip with a right angle should be at least 3 mm deep. In stage 1 of Dautel’s classification, it is possible to introduce the tip of the hook in the interosseous space. In stage 2, the hook must be long and strong enough to test the interosseous laxity with the use of a twisting motion applied to the hook. In stage 3, the optic easily passes from the midcarpal to the radiocarpal space through the diastasis. It can be understood that the use of an optic for small joints (1.9 mm) can distort the results.

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1.2 Natural Ligamentous Laxity

It is difficult to understand the degree of physiologic laxity of these interosseous ligaments. However, two elements can be useful:

First of all, the pre-operating clinical exam gives us information about the degree of laxity which can be expected if we are, as described by Christophe Rizzo, systematically bilateral and comparative. This exam is always completed by a dynamic radiographic report which is bilateral too.

Then, if we are lucky enough to use arthroscopy to test a wrist with one of the two interosseous ligaments which is sane in the midcarpal space, it is possible to trust its behaviour in the radiocarpal space. It is as if the sane couple was the reference to the injured couple. In other words, if the laxity detected in the testing of the scapholunate couple, which has an injured radiocarpal ligament, is the same as the one of the healthy triquetrolunate couple, we can come to the conclusion that this is a physiologic laxity.

2 False Negatives

These are situations when the arthroscopic dynamic testing tends to underestimate the score of severity of a scapho- or triquetrolunate instability.

2.1 The Tension Applied on the Finger Traps

It is necessary to insist on the fact that when the tension impressed on the extrinsic ligaments during wrist arthroscopy is too important, there can be a misinterpretation. Once the hook and the optic are in place in the midcarpal space, tension has to be relaxed. Moreover, the wrist has to be in a neutral position in prono-supination. Indeed, too many constraints in twisting motion have the same indirect effect on the extrinsic ligaments and can modify the interpretation of the arthroscopic testing.

2.2 The Position of the Examining Hook

It is essential that the hook is introduced in the axis of the interval to be tested. Indeed, for a testing of the scapholunate couple, the hook must be introduced by the radial midcarpal portal (RMC). The hook is thus parallel to the scapholunate interval, and the twisting motion becomes easy and natural. Once the hook is deeply introduced in the scapholunate space, until its right angle is inserted, a strong and progressive twisting motion is axially applied to the hook.

For the testing of the triquetrolunate couple, the hook must be parallel to the triquetrolunate interval, and thus it must be introduced by the ulnar midcarpal portal (UMC).

The previous elements can lead to a misinterpretation of the results of the dynamic testing. However, these inconveniences can be easily avoided if the surgeon has the adequate material, a good technique of arthroscopic palpation and if he takes care to get rid of the variations induced by the elements of extrinsic stabilization.