"The Future is Here"

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We live in an amazing world at amazing times as we are in the evolutionary stages of Orthobiologics. Now we are increasingly looking for biological solutions of biological problems and the best news is that it has gone from science fiction to a very real entity. Similarly access to investigations for previously impossible tasks have become a reality. Imagine a scenario when one is playing sports and hurts his shoulder and we would like to investigate him after a thorough clinical assessment. We would like to order a Magnetic Resonance Imaging (MRI) to exclude soft tissue injuries and we run into a well as the patient is claustrophobic, has a pacemaker or is overweight or has metal inside his body.[1,2] Although clinical examination and MRI play a key role in diagnosis, sometimes interpretation can be unclear or even wrong.[3,4] Nothing is more accurate than direct visualization, particularly when we have to determine if the patient need surgery.[5,6]With forward thinking and innovation technology there is now a real solution Office -Based Needle Arthroscopy.[7] It is a small Gadget that will make a Big Difference to the clinical practice.[8] (Fig IA, IB, IC, ID)

Clinic or office based arthroscopy is by no means a new idea but it has previously failed to become widely used. This is probably due the difficulties in transferring the type of required equipments (which closely mirrored that used in operating theatres) to the clinic environment.

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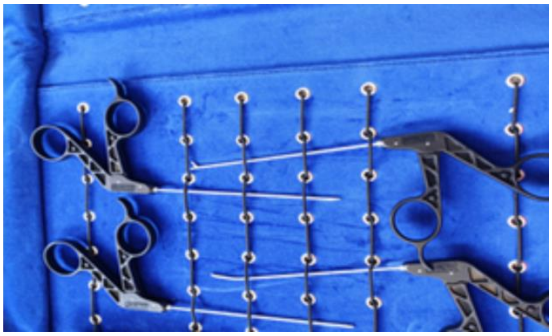

Fig IA, IB: Office-Based Needle Arthroscopy Equipments

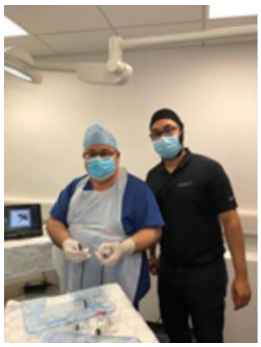


Fig IC, ID: Preparation for Office-Based Needle Arthroscopy.

The key to its successful implementation is to correctly identify the patients rather than use it indiscriminately as after all there is a cost issue being a one-use product only. Although when it comes to the cost it is cheaper than the traditional specialised MR Arthrogram.[9]

It is a minimally invasive procedure. It is performed under local anaesthesia, and the procedure takes less than 15 minutes. Most patients can leave the office about 10 minutes after that. A topical aseptic solution to the location of the desired portal is applied. Using a sterile syringe, inject the surrounding dermal area with a local anaesthetic.

Infiltrate the joint if required and discomfort is felt. (Fig IIA-IID) There are no major concerns of chondrolysis in the literature.[10]A tiny scope is inserted into a knee, hip or shoulder joint. The scope is with a camera attached that shows images from inside the joint on a screen in the office.

Fig IIA, IIB, IIC, IID: Steps of Local Anaesthesia to portal canula inserted and scope into sheath.

Over 1400 cases were reviewed in a study but no superficial cellulitis, joint infections and chondral toxicity was reported.[11] Although there can be risk of infection when introducing a needle into the joint in a non-theatre (operating room) environment [12,13] but with adequate attention to sterility we do not believe this will be an issue, and the fact that we regularly inject steroid into joints in the clinic without infection problems should be reassuring. Obtaining an adequate analgesia may be a worry but we had a personal experience of over 12 shoulder needle scopes and pain had never been an issue.

The question most of us are keen to ask will the views obtained be of diagnostic quality? [14,15]From the personal use of such a device we have seen thus the answer is 'yes'. Mi-eye 2 and Nanoscope the Arthrex version are both more sensitive and specific than MRI, the Nanoscope being now a 4K device. There are subtle differences in the two available scopes. Being keen Arthrex users we have had the privilege of using Nanoscope pre-launch and also had used the Mi-eye 2.The Mi-eye 2 is a 2.25 mm retractable needle 0-degree visual field and all in one scope. Although there is no ability to change the viewing angle, the very wide-angle lens should allow adequate visualisation of the important intra-articular features. The Nanoscope is a 1.9 mm more conventional scope with a trocar and cannula and also a hundred degree lens that replicates the standard experience.

The indications of needle scope are evolving but we have summarised these as follows:

1. Not a candidate for MRI.
2. Continued symptoms with inconclusive MRI.
3. Orthobiologics planning and assessment.
4. Post-surgical evaluation with symptoms.
5. The Post COVID waiting patients for MRI scans of the knee and shoulder.

There is a small learning curve especially if one uses the zero degree scope. We recommend that one tries it on a simulator first then use it on a cadaver and finally in a theatre so that one can compare notes and pictures and be comfortable with its use before using real time in office arthroscopy setting. (Fig IIIA-IIIB,IIIC,IIID).

Fig IIIA, IIIB, IIIC: Needle scope training

Fig IIID: Needle V/S Real scope images.

Joint arthroscopy is the gold standard for intra-articular abnormalities of all major and small joints. However, it is not efficient or possible to perform this procedure on all patients because of its inherent invasive nature, need for anaesthesia, cost and other associated risks. In an effort to reproduce the information provided from joint arthroscopy needle arthroscopy is an amazing alternative and is proving itself in pre and post op assessment.

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