SYNOVIAL FLUID REPLACEMENT IN ARTHROSCOPIC SHOULDER SURGERY

A RANDOMISED, PROSPECTIVE, CONTROLLED TRIAL

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Introduction

- **Shoulder arthroscopy has become a widely used procedure for both diagnosis and treatment.**
- **It offers less surgical insult than a traditional open approach, with a correspondingly quicker recovery.**
- **However it is not an absolutely benign procedure, due both to the effects of the irrigation solution on articular cartilage metabolism as well as post-operative pain, subsequent joint immobilization secondary stiffness.**
- **Hyaluronans are a normal proteoglycan component of hyaline cartilage and synovial fluid, and play an important role in joint lubrication and metabolism.**
- ***Viscoseal* (TRB Chemedica, AG) is a 0.5% isotonic solution of 1.2 Million Dalton molecular weight hyaluronan.**
- **Hyaluronans have been proven to have short-term benefits in reducing joint pain and swelling whilst increasing mobility following knee arthroscopy.**

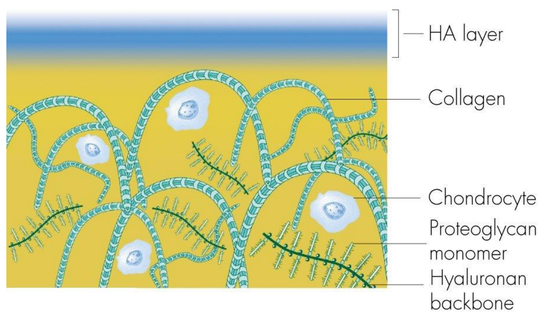


Figure 1: Articular cartilage is covered by a protective hyaluronan coating. This hyaluronan barrier protects cartilage from inflammatory mediators as well as degrading enzymes (proteases). Hyaluronans also maintain articular cartilage integrity and strength.

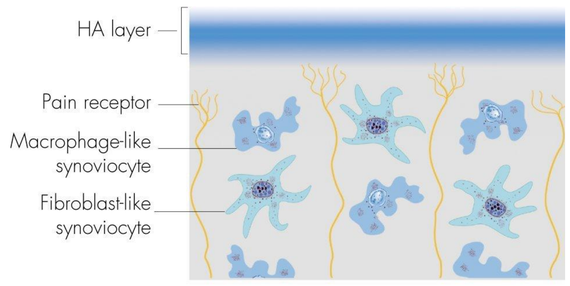


Figure 2: In the synovial tissues Hyaluronans provides a protective barrier. This barrier protects the synovium against inflammatory mediators and shields pain receptors from pain mediators.

Aims

The aim of this study was to assess the effect of *Viscoseal* on the short term outcomes of shoulder arthroscopy.

Materials and Methods

- **Fifty eight adult patients undergoing arthroscopic subacromial decompression were randomised into two groups.**
- **The first group received 10 mls of Viscoseal and 10 mls of 0.5% bupivicaine (local anaesthetic) injected into the subacromial bursa via the arthroscope at completion of the procedure (n=28).**
- **The control group was a matched group of patients who received 20 mls of 0.5% bupivicaine only (n=30).**
- **All procedures were performed or supervised by the senior author.**
- **The patients were blinded to the injection given.**
- **Post-operative regimens were standardised and all procedures performed by the same surgeon in the same hospital.**

Results

The mean age of the viscoseal group was 50.5 years (24-74) and in the control group 48.9 (31-80).

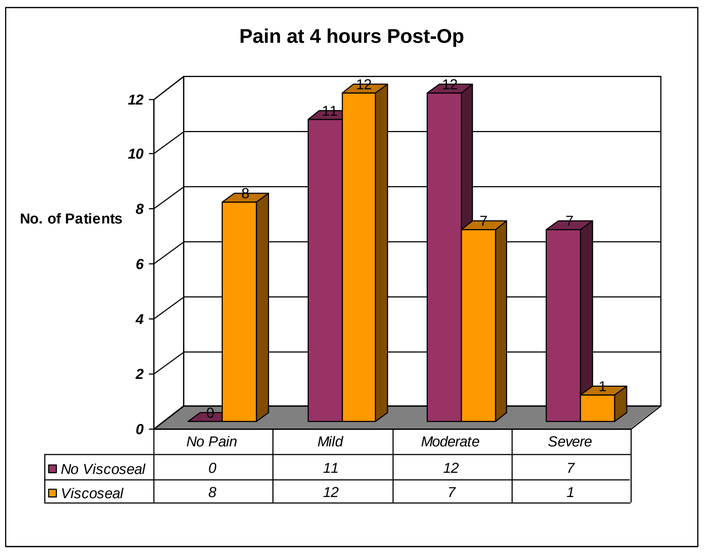
The time to discharge from hospital for the Viscoseal group was 5.2 hours +/-13 hours, and for the control group 9.6 +/- 5.3 hours. This was significantly earlier (p = 0/0001).

There were no adverse events in either group.

PAIN RELIEF

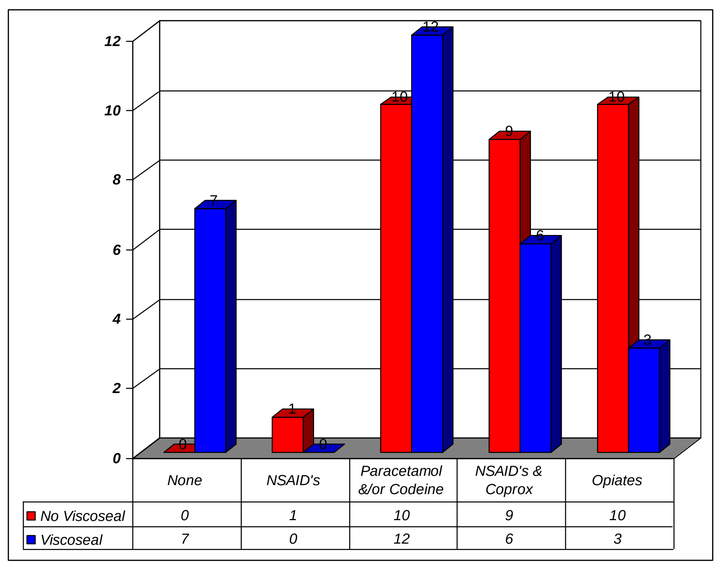
The early post-operative data shows that the Viscoseal group experienced less severe pain 4 hours post-operatively than the control group, with 3.5% of the Viscoseal group experiencing severe pain compared to 23% of the control group.

29% of the patients in the Viscoseal group felt no pain at 4 hours post-operatively, while none of the patients in the control group had no pain



ANALGESIA REQUIREMENTS

The Viscoseal group also required less analgesia post-operatively than the control group. 25% of the Viscoseal required no analgesia, whilst all patients in the control group required analgesia. 33.3% of the control group required opiates compared to 10.7% in the Viscoseal group (Figure 2).



Discussion

Hyaluronans have been shown to reduce symptoms of pain post arthroscopy in the knee and temperomandibular joints, with lowered joint levels of Prostaglandin and Interleukin 1 [i][ii][iii].

In the knee, studies have shown a range of beneficial effects:

1. **Subjective improvement up to 1 year post HA injection, beyond placebo effect[v]**
2. **Increased WOMAC scores for pain & function at 26 weeks over placebo, and as good as NSAIDS but safe.[vi]**
3. **In animal models, it helps after ACL[vii] and meniscal injury[viii], by inhibiting cartilage degeneration.**

Subjective improvements in pain, movement and function were seen early on in treatment for a variable length (3 to 12 months).

Our study demonstrates similar results in the shoulder as those in the temperomandibular joint and knee joint.

Conclusions

Patients receiving injections with Viscoseal felt less post-operative pain and required less post-operative analgesia. They were discharged twice as early as those not getting Viscoseal injections.

Viscoseal seems to have a beneficial role in improving early outcomes after shoulder arthroscopic surgery.

References

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