

# Considering the Suitability of Anti-adhesive Agents Used after a Repair of Rotator Cuff Tears

Young Rae Moon<sup>✉</sup>

Department of Orthopedic Surgery, Chosun University School of Medicine, Gwangju, Korea

Many anti-adhesive agents have recently been introduced. Among them, the most widely used agent is hyaluronic acid, which is a high molecular polysaccharide that forms the main component of synovial fluid.<sup>1)</sup> Its role in minimizing pain and controlling inflammatory processes has been reported in several previous studies. The beneficial effect of hyaluronic acid or hyaluronan (HA) on the treatment of ligament injuries and arthritis has also been reported. Recently, the application of hyaluronic acid has been increasing in the treatment of shoulder diseases, including rotator cuff disease.<sup>2-4)</sup> However, advantages of HA for rotator cuff tears are still controversial.<sup>3)</sup>

HA-based anti-adhesive agents not only minimized infertility caused by adherence of the fallopian tube after gynecologic surgery, but it also helped prevent cell attachment and other side effects associated with ligament injuries and abdominal surgery.<sup>1,5)</sup> To overcome such limitations, HA has been developed, such as Guardix, which is composed of HA and sodium carboxymethylcellulose (CMC) and can be maintained for a long period of recovery.<sup>6)</sup>

There are several reports asserting that injection of HA/CMC formulation is associated with good clinical outcome after suturing of arthroscopic rotator cuff tear.<sup>5)</sup>

In addition, protescal, which is made by adding sodium alginate to HA/CMC, has also appeared, and various studies using anti-adhesive agents have been carried out. However, some studies report that these anti-adhesive agents have little effect.<sup>7,8)</sup>

However, it may be necessary to consider whether the use of these anti-adhesive agents is really effective in patients who have been repaired after ruptured rotator cuff, or whether this is a simple commercial strategy.

First, postoperative stiffening should be viewed as a combined action of several factors, not just rotator cuff sutures.

Therefore, whether the degree of postoperative range of motion recovery can be evaluated simply by adhesion of the rotator cuff is questionable.

It is also necessary to biochemically confirm that these components are absorbed and that the half-life is maintained for a fixed period of approximately 5 to 6 weeks after rotator cuff repaired.

There have been a few reports about the use of anti-adhesive agents after suturing rotator cuff tears. However, to date, studies showing clear benefits of this are limited. There is still a shortage of data in the laboratory for this to be applicable on the human body, and a more critical view is needed. Furthermore, more concern and research are needed in the application of anti-adhesive agents.

## References

1. Blaine T, Moskowitz R, Udell J, et al. Treatment of persistent shoulder pain with sodium hyaluronate: a randomized, controlled trial. A multicenter study. *J Bone Joint Surg Am.* 2008;90(5):970-9.
2. Moreland LW. Intra-articular hyaluronan (hyaluronic acid) and hylans for the treatment of osteoarthritis: mechanisms of action. *Arthritis Res Ther.* 2003;5(2):54-67.
3. Oryan A, Moshiri A, Meimandi Parizi AH, Raayat Jahromi A. Repeated administration of exogenous Sodium-hyaluronate improved tendon healing in an in vivo transection model. *J Tissue Viability.* 2012;21(3):88-102.
4. Tuncay I, Ozbek H, Atik B, Ozen S, Akpınar F. Effects of hyaluronic acid on postoperative adhesion of tendo calcaneus surgery: an experimental study in rats. *J Foot Ankle Surg.* 2002; 41(2):104-8.

<sup>✉</sup>Correspondence to: Young Rae Moon

Department of Orthopedic Surgery, Chosun University Hospital, 365 Pilmundae-ro, Dong-gu, Gwangju 61453, Korea  
Tel: +82-62-220-3147, Fax: +82-62-226-3379, E-mail: ylm2103@gmail.com

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5. Oh CH, Oh JH, Kim SH, Cho JH, Yoon JP, Kim JY. Effectiveness of subacromial anti-adhesive agent injection after arthroscopic rotator cuff repair: prospective randomized comparison study. *Clin Orthop Surg.* 2011;3(1):55-61.
6. Kim JH, Lee JH, Yoon JH, Chang JH, Bae JH, Kim KS. Antiadhesive effect of the mixed solution of sodium hyaluronate and sodium carboxymethylcellulose after endoscopic sinus surgery. *Am J Rhinol.* 2007;21(1):95-9.
7. Kim T, Ahn KH, Choi DS, et al. A randomized, multi-center, clinical trial to assess the efficacy and safety of alginate carboxymethylcellulose hyaluronic acid compared to carboxymethylcellulose hyaluronic acid to prevent postoperative intrauterine adhesion. *J Minim Invasive Gynecol.* 2012;19(6):731-6.
8. Na SY, Oh SH, Song KS, Lee JH. Hyaluronic acid/mildly cross-linked alginate hydrogel as an injectable tissue adhesion barrier. *J Mater Sci Mater Med.* 2012;23(9):2303-13.