Effect of Retropharyngeal Steroid on Prevertebral Soft Tissue Swelling Following Anterior Cervical Discectomy and Fusion; A Prospective, Randomized Study

**Introduction:** There had been several reports on intravenous corticosteroid to prevent airway complication without a consensus, but, no reports have discussed the use of local steroids to reduce prevertebral soft tissue swelling (PSTS). This is a prospective, randomized study to analyze the effect of local retropharyngeal steroid to reduce PSTS after anterior cervical discectomy and fusion (ACDF).

**Methods:** Fifty cases that underwent ACDF involving 1 or 2 segments were enrolled. The mean follow-up period was 24 months. On the 25 cases randomly selected as the steroid group, a mixture of triamcinolone and morcellized collagen sponge was applied to the retropharyngeal space before wound closure. As the control group, the other 25 cases went through operation without steroid. We measured the PSTS ratio to vertebral body from C3 to 7 and PSTS index (PSTSI; mean of PSTS ratio at C3, 4, and 5) on cervical spine simple lateral radiographs were taken preoperatively, immediately after operation, and at postoperative 2 days, 4 days, 2 weeks and the last follow-up(Fig. 1). The changes in odynophagia, radiological union, Prolo functional scale were analyzed.

**Results:** The PSTS ratio of the steroid group was significantly lower on C3 and C4 immediately after operation, on C3, 4, 5 and C6 at postoperative 2 days, on C3, 4, and 5 at 4 days. The differences of PSTSI (steroid: control group) maintained at 58.2: 74.3% (p=0.004) immediately after operation, 57.9: 84.1% (p=0.000) at 2 days, 56.3: 82.9% (p=0.000) at 4 days, and 44.9: 51.4% (p=0.037) at 2 weeks (Fig. 2). The mean VAS for odynophagia was significantly lower in the steroid group until postoperative 2 weeks. At the last follow-up, the radiological and clinical outcome showed no significant difference.

**Conclusion:** Using the retropharyngeal local steroid, we significantly reduced PSTS and odynophagia following ACDF without additional complication. This method might be considered a simple and effective method that can lower the risk of airway complications after ACDF.

**Figure 1. Measurement of PSTS on preoperative (A) and postoperative (B) radiographs.**
Figure 2. Diagram showing significant difference of the PSTS index between the two groups.