

Is it really significant to preserve an attachment of the nuchal ligament to spinous process in cervical laminoplasty?

- Comparative study of selective laminoplasty between cases with an attachment of the nuchal ligament sacrificed and those preserved -

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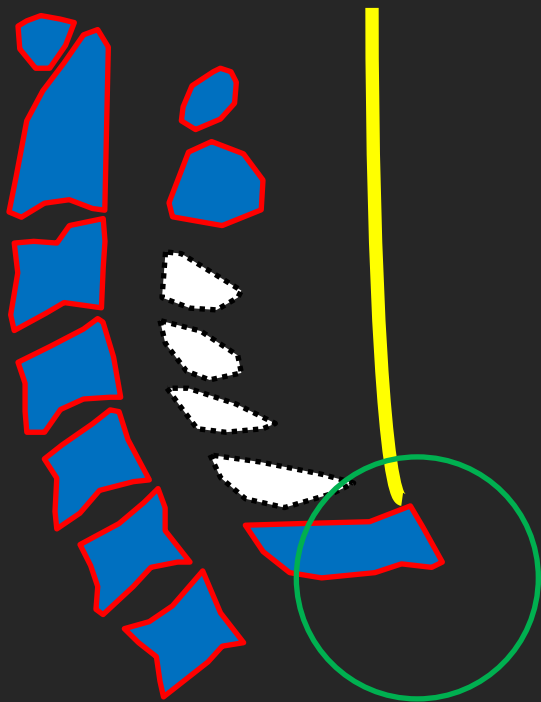
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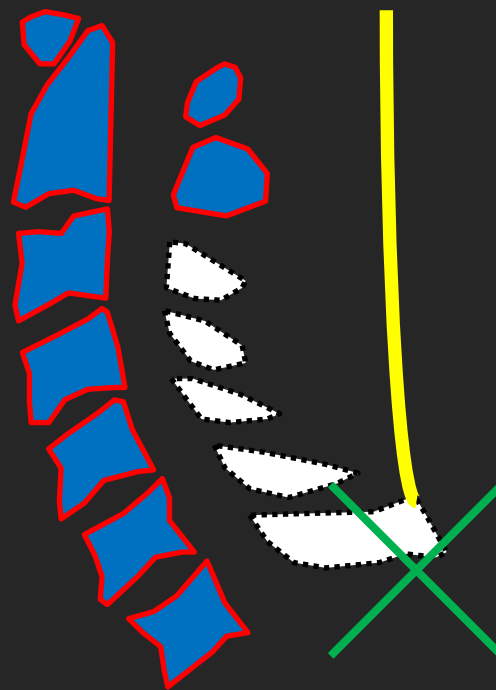
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Attachment of nuchal ligament



C3-6

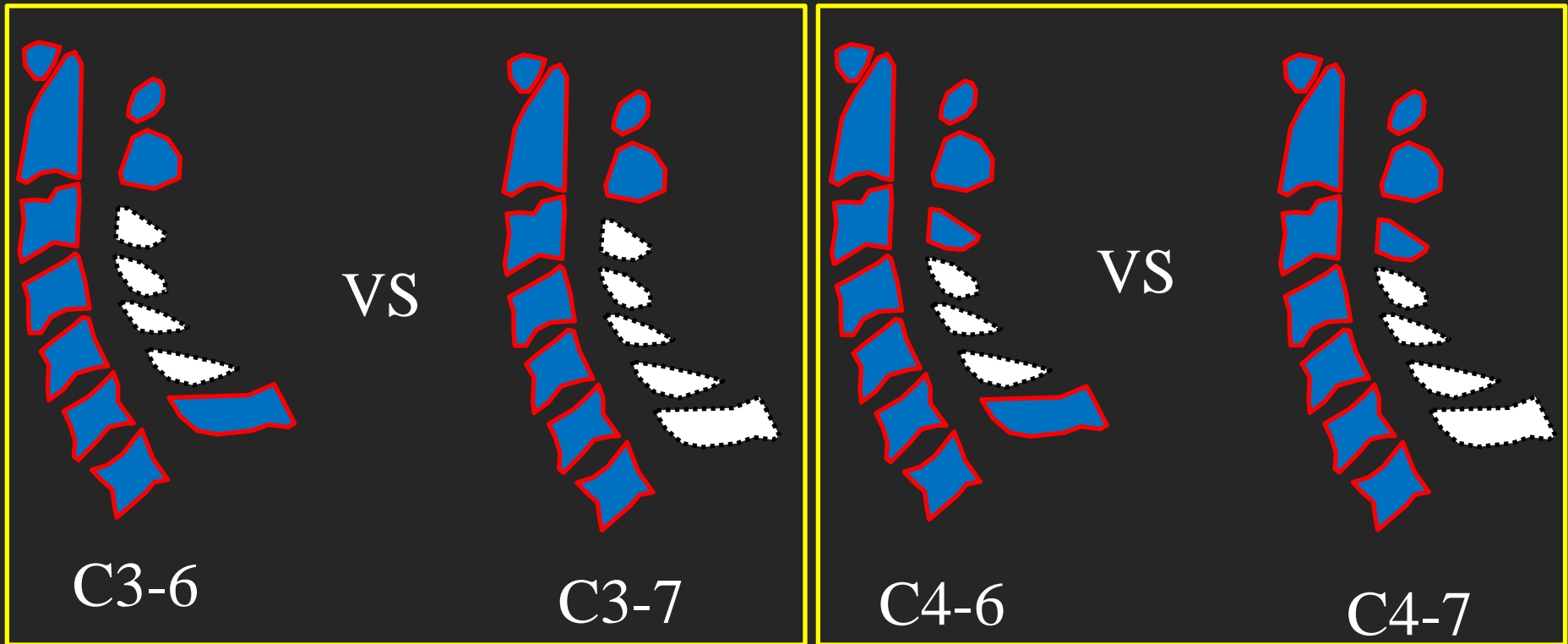
Better !



C3-7

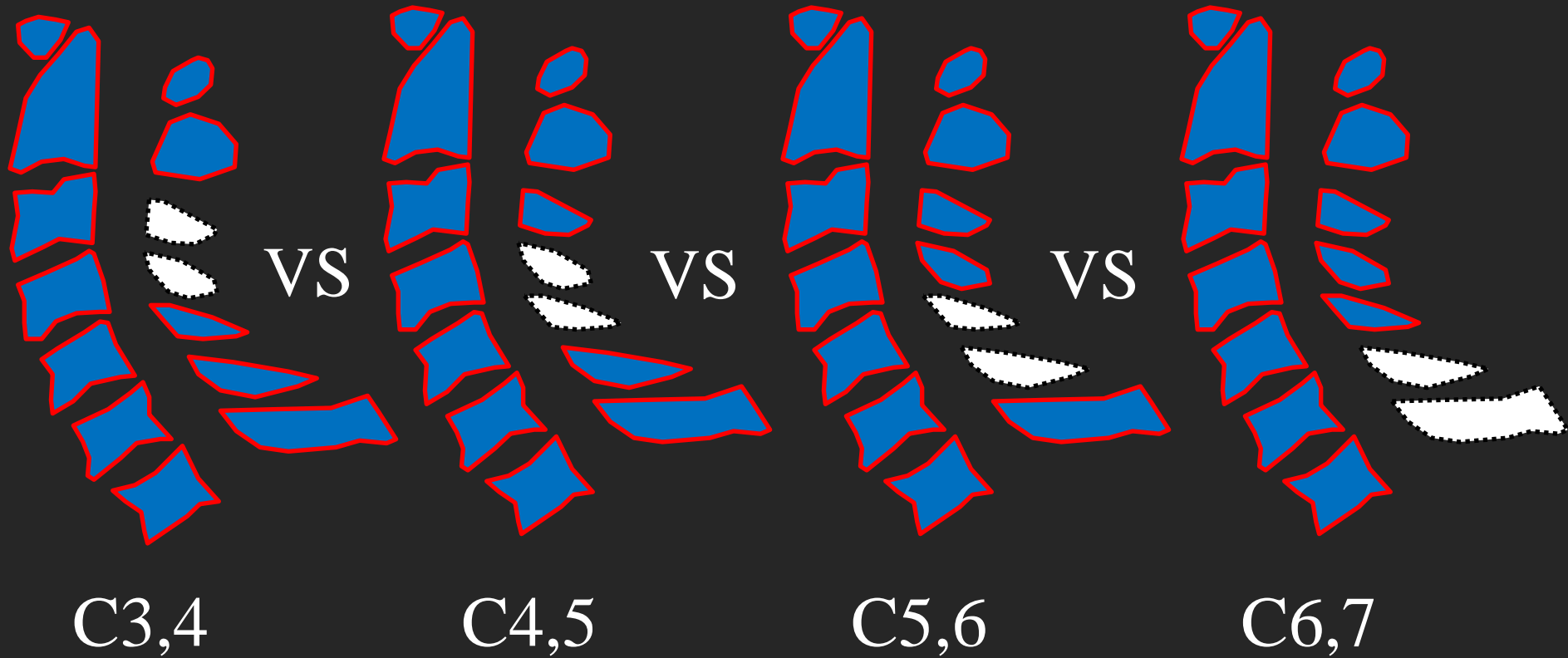
Previous papers have reported that preservation of C7 is significant to reduce neck pain and loss of cervical curvature in laminoplasty because nuchal ligament was attached to C7. But they compared surgical results between C3-7 laminoplasty and C3-6 laminoplasty.

Previous studies



Such comparison is inadequate because one group is more invasive to the posterior stabilizing structures than the other. C3-7 laminoplasty is more invasive than C3-6 laminoplasty. It is also the case with comparison between C4-7 and C4-6.

Current study

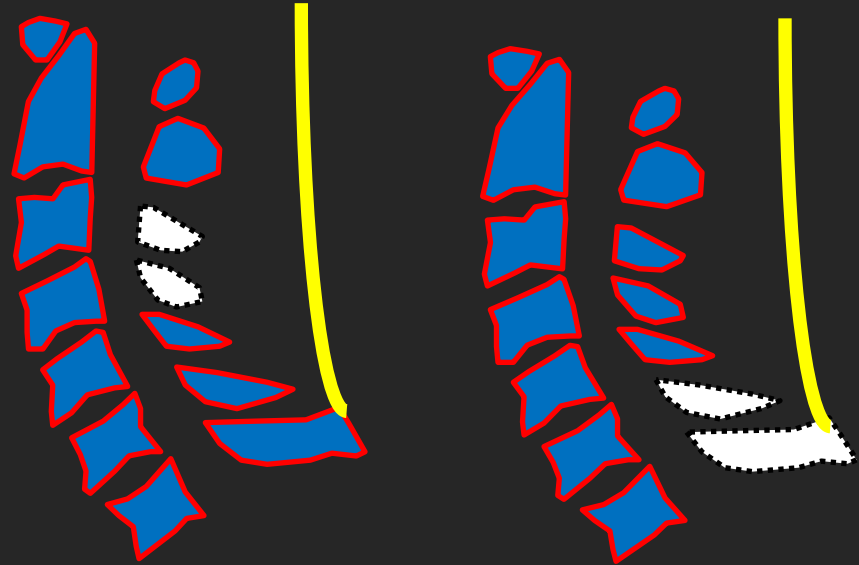


We compared surgical results between the groups which have the same amount of surgical invasion to the posterior stabilizing structures. Patients in each group underwent laminectomy of one or two adjacent laminae, the difference among each group was only the level of surgical invasion.

Cases

77 CSM patients 2002-2009

Attachment of nuchal ligament

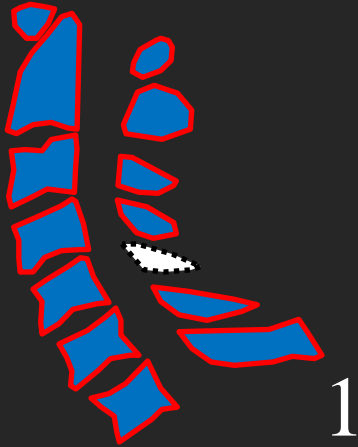


Preserve

Non-preserve

Between 2002 and 2009, 77 patients with cervical spondylotic myelopathy underwent adjacent two-level or one-level laminectomy. We divided these 77 patients into 2 groups by the number of sacrificed extension units of the spinous processes. Each group was further divided into 2 groups, one; attachment of nuchal ligament was preserved, two; attachment of nuchal ligament was non-preserved. The level of attachment of nuchal ligament was decided by pre-operative MRI and intra-operative findings.

Cases



1

Number of sacrificed
extension unit

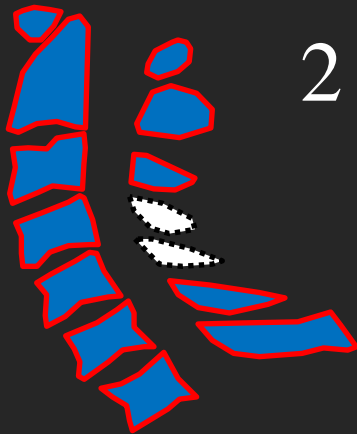
Attachment of nuchal ligament

Preserve

Non-preserve

P1

N1



2

P2

N2

For example, P1 group indicates one extension unit sacrificed, mono-laminectomy, with attachment of nuchal ligament preserved.

On the other hand, N2 group indicates two extension units sacrificed, laminectomy of two adjacent laminae, with attachment of nuchal ligament non-preserved.

45 CSM Cases with monolaminectomy

Sacrificed extension unit		Attachment of nuchal ligament	
		C6	C7
C3	3	1	2
C4	18	10	8
C5	7	4	3
C6	14	5	9
C7	3	1	2
		21	24

Preserve Group (P1)
38 patients

Non-Preserve Group (N1)
7 patients

32 CSM cases with selective laminectomy of two adjacent laminae

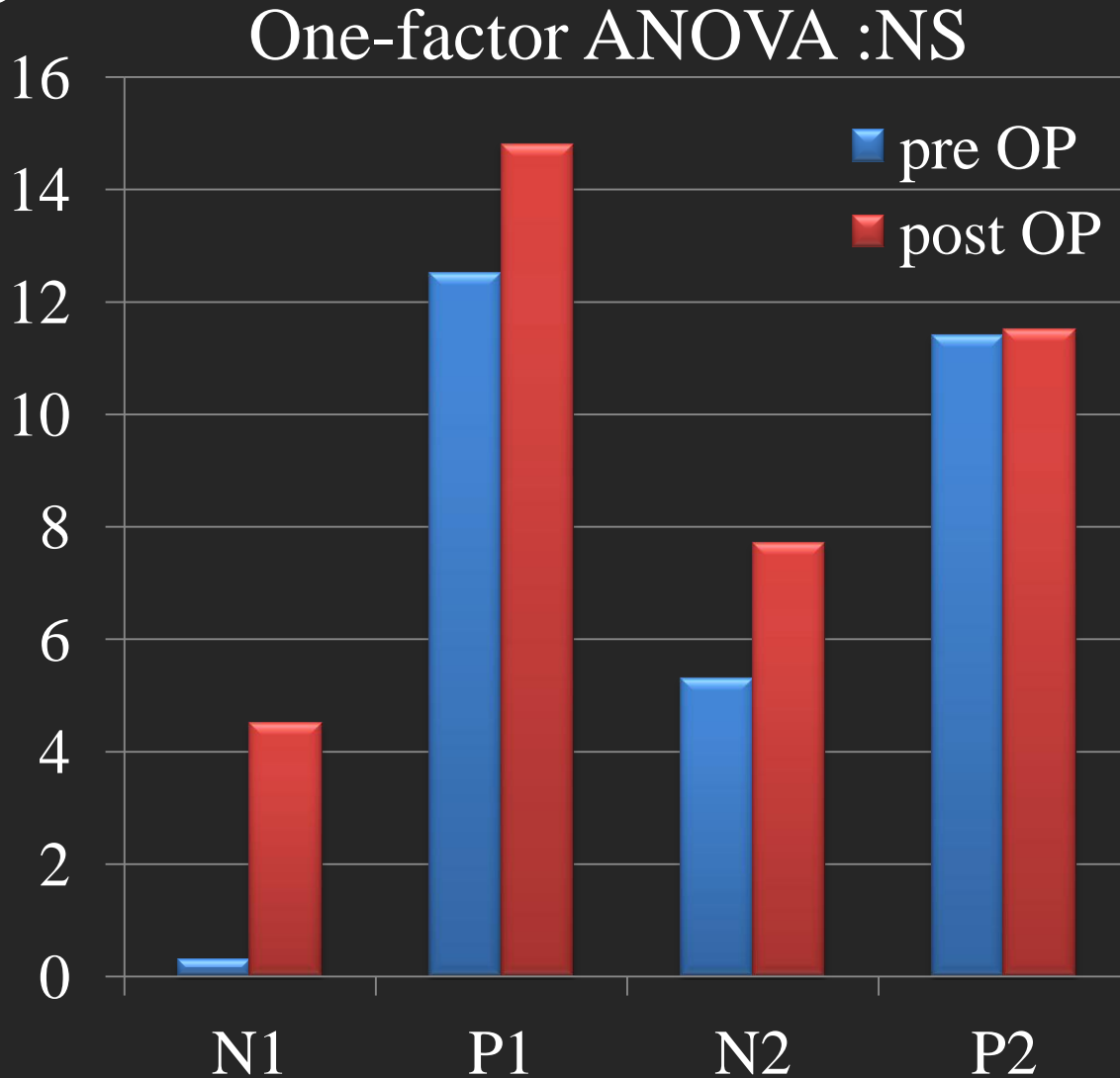
Sacrificed extension unit		Attachment of nuchal ligament		
		C5	C6	C7
C3,4	5		2	3
C4,5	7		4	3
C5,6	16	1	5	10
C6,7	4		1	3
		1	12	19

Preserve Group (P2)
22 patients

Non-Preserve Group (N2)
10 patients

Average C2-7 angles

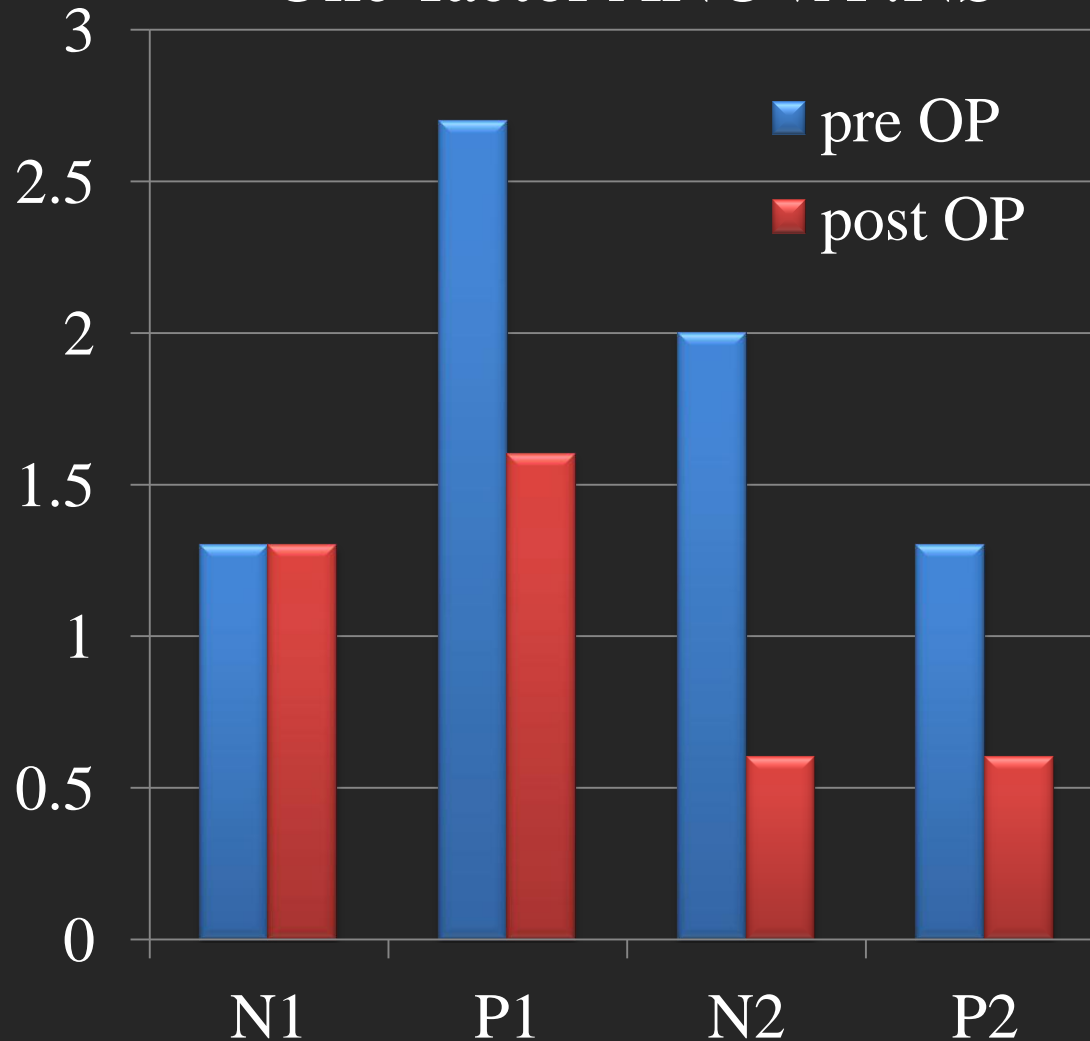
degree



C2-7 angles were increased post-operatively in all 4 groups. C2-7 angles was low in N1 and N2 group, but there is no significant difference among 4 groups both pre- and post-operatively.

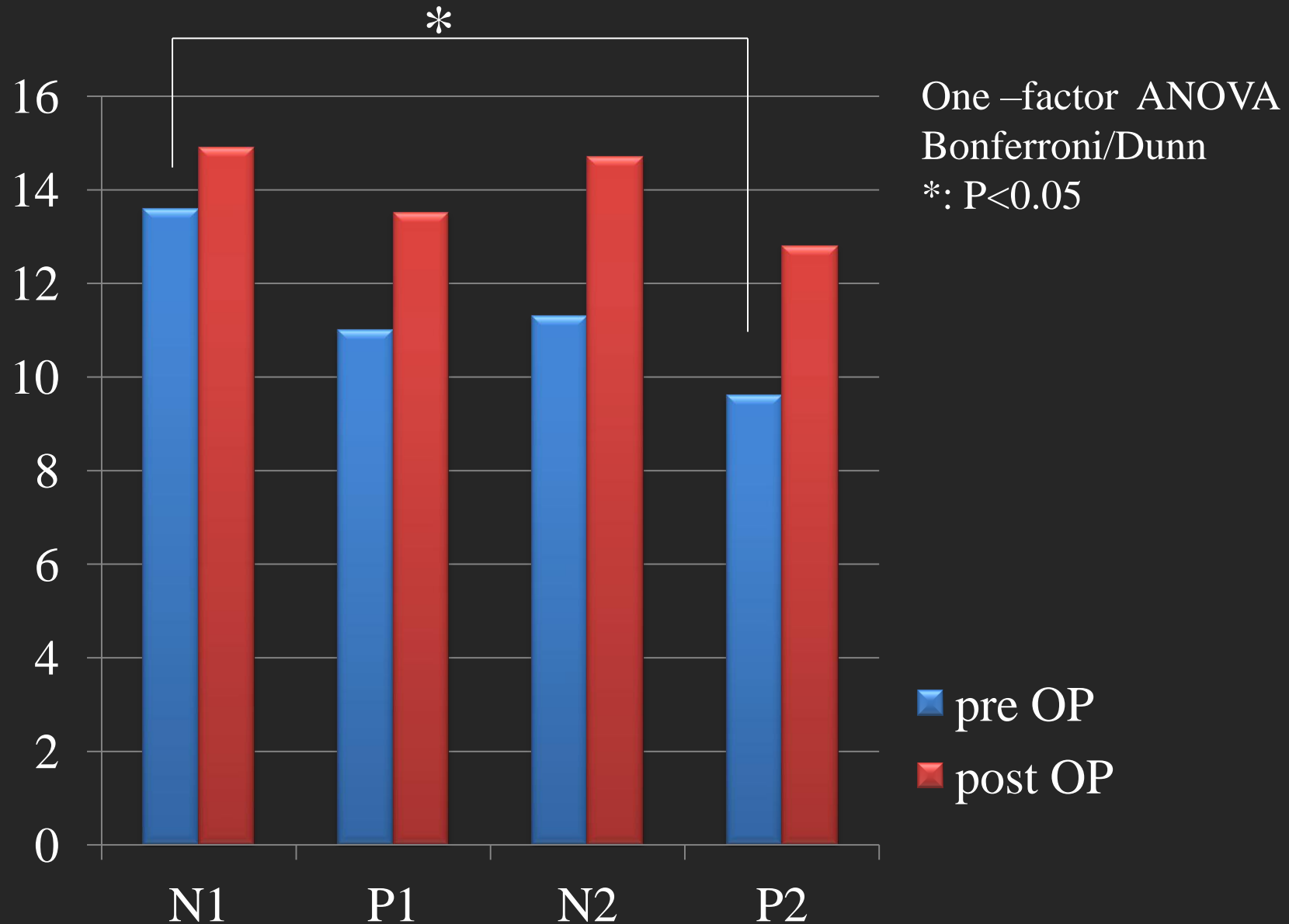
Average VAS scores (full score: 10)

One-factor ANOVA :NS



There was no significant difference in VAS scores among 4 groups both pre- and post-operatively.

Averaged JOA score (full score: 17)



There is significant difference in pre-operative JOA scores between N1 and P2 group. But there is no significant difference in the post-operative scores among 4 groups.

conclusions

- Preservation of C6 or C7 extension units where nuchal ligament attaches is not significant to maintain cervical curvature and to diminish postoperative neck pain as compared to the other units.
- There is no conflict in this presentation.