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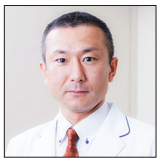
Case Report

Recurrent ossification of the posterior longitudinal ligament in the upper thoracic region 10 years after initial decompression

Naoki Segi, Kei Ando, Hiroaki Nakashima, Masaaki Machino, Sadayuki Ito, Hiroyuki Koshimizu, Hiroyuki Tomita, Shiro Imagama

Department of Orthopedic Surgery, Nagoya University Graduate School of Medicine, Nagoya, Aichi, Japan.

E-mail: Naoki Segi - naoki.s.n@gmail.com; *Kei Ando - andokei@med.nagoya-u.ac.jp; Hiroaki Nakashima - hirospine@med.nagoya-u.ac.jp; Masaaki Machino - masaaki_machino_5445_2@yahoo.co.jp; Sadayuki Ito - sadaito@med.nagoya-u.ac.jp; Hiroyuki Koshimizu - love_derika@yahoo.co.jp; Hiroyuki Tomita - hiro_tomi_1031@yahoo.co.jp; Shiro Imagama - imagama@med.nagoya-u.ac.jp



***Corresponding author:**
Kei Ando,
Department of Orthopedic Surgery, Nagoya University Graduate School of Medicine, Nagoya, Aichi, Japan.

andokei@med.nagoya-u.ac.jp

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ABSTRACT

Background: Posterior decompression surgery consisting of laminoplasty is generally considered be the treatment of choice for upper thoracic OPLL. Here, we describe a patient who, 10 years following a C3–T4 level laminectomy, developed recurrent OPLL at the T2–3 level with kyphosis requiring a posterior fusion.

Case Description: A 64-year-old male with CT documented OPLL at the C3–4, C6–7, and T1–4 levels, originally underwent a cervicothoracic laminectomy with good results. However, 10 years later, when T2–3 OPLL recurred along with kyphosis, he warranted an additional posterior fusion.

Conclusion: Due to the long-term risks of developing kyphotic deformity/instability, more patients undergoing initial decompressive surgery alone for upper thoracic OPLL should be considered for primary fusions.

Keywords: Indirect decompression, Ossification of the posterior longitudinal ligament, Posterior decompression, Posterior fusion with dekyphosis, Upper thoracic ossification of the posterior longitudinal ligament

INTRODUCTION

Ossification of the posterior longitudinal ligament (OPLL) occurs in approximately 1–5% of patients and may contribute to severe myelopathy.[2] Laminoplasty usually provides good results for cervical OPLL without kyphosis, where the occupying ratio is <60% of the spinal canal diameter.[3] However, patients with thoracic OPLL may additionally warrant fusion to avoid the delayed evolution of kyphosis.[8] Here, we present a 64-year-old male who, 10 years following a C3–T4 laminoplasty, developed recurrent myelopathy due to T2–3 kyphosis requiring a posterior fusion.

CASE REPORT

A 64-year-old male presented with a progressive quadriparesis (i.e., JOA score 11)/myelopathy due to cervicothoracic OPLL. The MR and CT studies showed spinal canal stenosis with cord compression at the C3–4/T2–3 levels, and OPLL at the C3–4, C6–7, and T1–4 levels. The

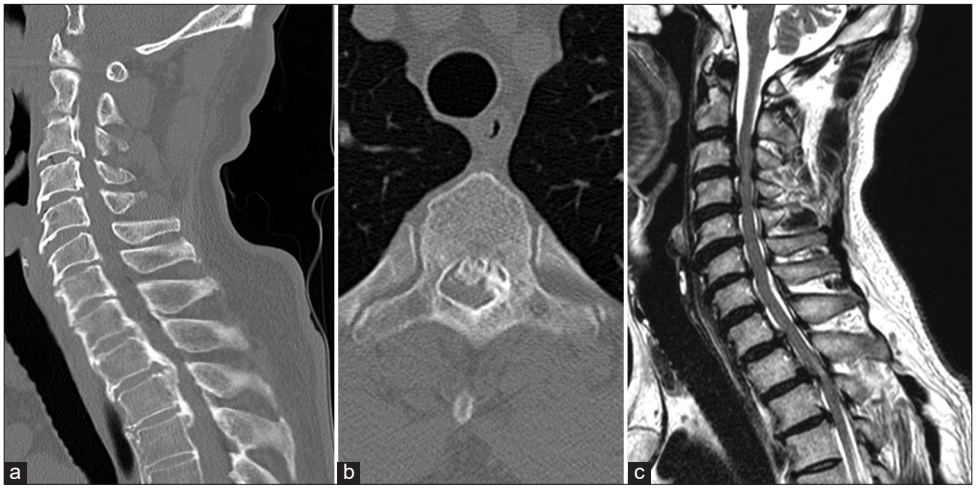

Figure 1: Images before the initial surgery. (a) CT sagittal image showed OPLL. (b) Ossification lesion at the T2–3 level. (c) MRI showed hyperintense changes of the spinal cord at C3–4 and T2–3 levels. CT: Computed tomography, MRI: Magnetic resonance imaging, OPLL: Ossification of the posterior longitudinal ligament.

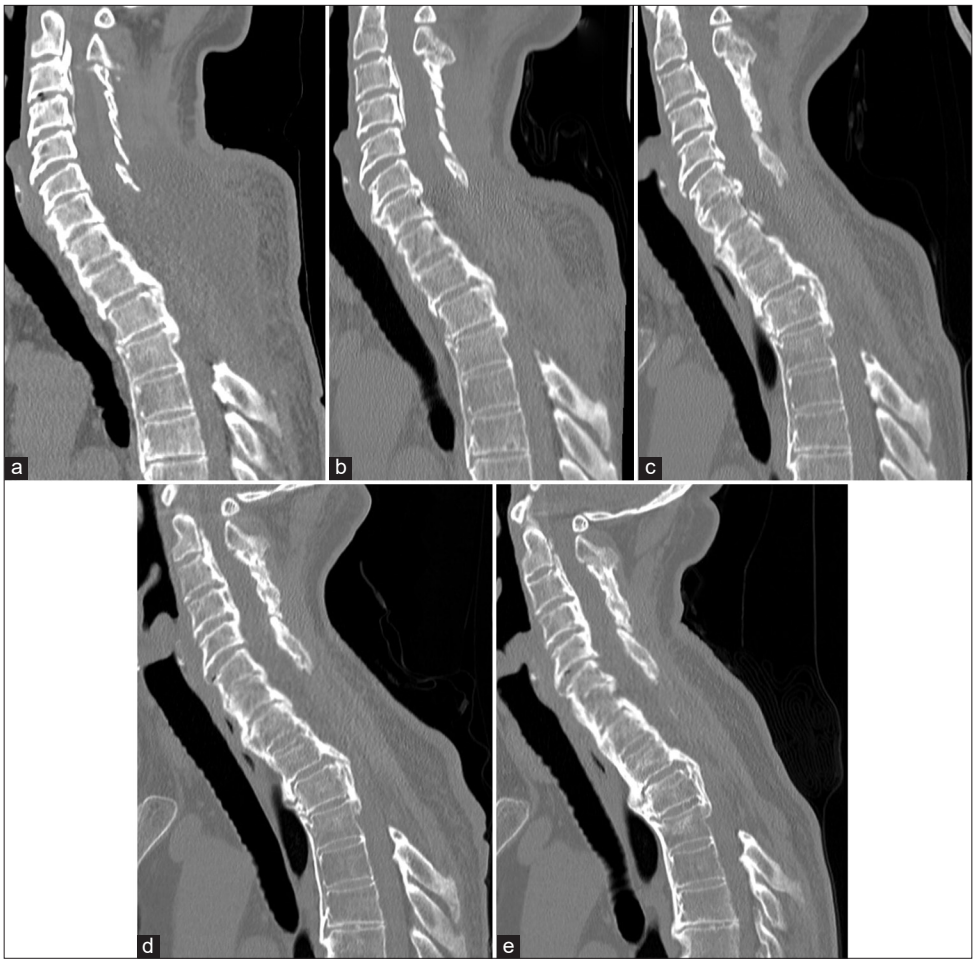

Figure 2: Change in CT sagittal image. CT sagittal images (a) after initial surgery and at (b) 2 years, (c) 5 years, (d) 7 years, and (e) 9 years. T1–4 kyphosis was 18.3°, 18.1°, 18.4°, 23.2°, and 28.7°, respectively, and OPLL thickness was 8.7 mm, 8.6 mm, 8.8 mm, 9.4 mm, and 11.2 mm, respectively. CT: Computed tomography, OPLL: Ossification of the posterior longitudinal ligament.

occupancy ratio for OPLL of 51.2% was maximal at the T2–3 level [Figure 1]. The patient's first surgery included a double-door laminoplasty from C3–7 and laminectomy between T1–4. Postoperatively, his JOA score was 16 [Figure 2].

10-year follow-up revealing T2–T3 kyphosis warranted posterior fusion

Ten years later ate age 74, the patient presented with a recurrent paraparesis/myelopathy (i.e., JOA score 14). attributed to MR/CT studies documenting maximal T2–3 cord compression from OPLL/angulation (cord pathology best seen on the MR) [Figure 3]. The dynamic CT images identified OPLL from C6–T2 and T3–9, with preserved mobility except at the T2–3 level. Both X-rays/CT images showed the angle of kyphosis from T1–4 was 33.2° in forward flexion and 22.7° in extension (i.e., neutral 29.5 degrees) [Figure 4]. The patient underwent a posterior C6–T5 fusion using bilateral pedicle screw-rod fixation to stabilize the T2–3 pathology. Postoperative CT/MRI studies confirmed reduction of the kyphosis and adequate ventral cord decompression at T2–3 [Figure 5]. Three months postoperatively, the patient regained nearly normal function (JOA score 16) and radiographic stability.

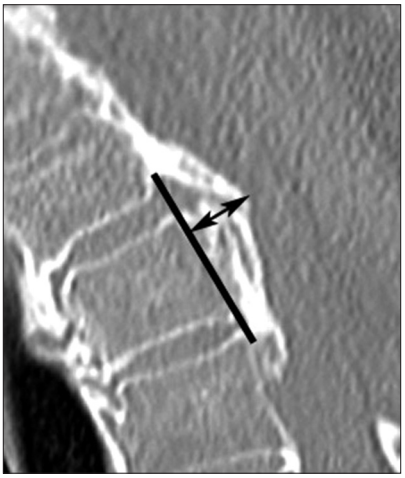

Figure 3: Measurement of OPLL thickness. OPLL: Ossification of the posterior longitudinal ligament.

DISCUSSION

Epidemiologically

OPLL most commonly involves the T1 level in males and is frequently associated with cervical OPLL.[5] Although the

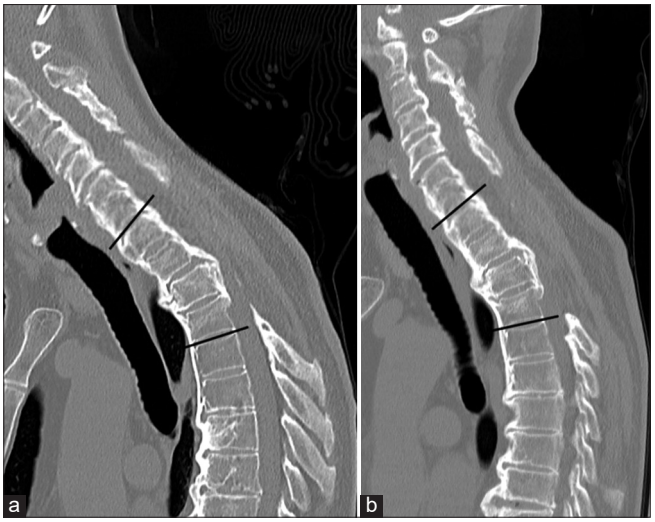

Figure 4: Dynamic CT sagittal image before revision surgery. CT sagittal images of forward and backward bending at the time of symptom recurrence. At the neutral position, the T1–4 kyphosis angle was 29.5° and OPLL thickness was 11.6 mm. Mobility was noted at the upper thoracic spine, which appeared to be fused. Dynamic T1–4 kyphosis angles were (a) 33.2° in forward bending and (b) 22.7° in backward bending. CT: Computed tomography, OPLL: Ossification of the posterior longitudinal ligament.

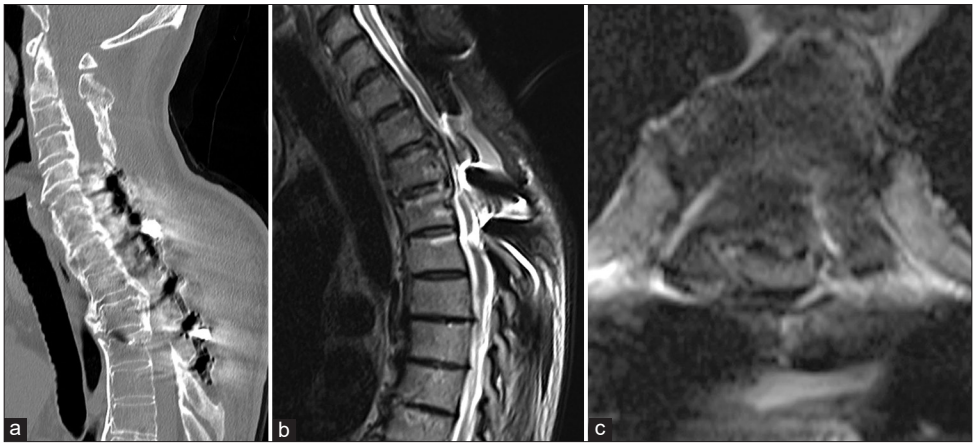

Figure 5: Postoperative CT and MRI images after revision surgery. (a) After revision surgery, T1–4 kyphosis angle was 23.3°. (b and c) Indirect decompression at the T2–3 level was obtained by dekyphosis. CT: Computed tomography, MRI: Magnetic resonance imaging.

long-term efficacy of laminoplasty for cervical OPLL is well documented, results/outcomes for upper thoracic OPLL treated with laminoplasty are less well defined.[4,7]

Fusion for upper thoracic OPLL

Instrumented upper thoracic fusions for OPLL are 82.8–97.7% effective in achieving stabilization/avoidance of OPLL progression.[1,6] Here, a 64-year-old male originally underwent a double-door laminoplasty from C3–7 and laminectomy between T1–4 for upper thoracic OPLL. Ten years later, when he presented with a recurrent myelopathy and T2–3 motion with marked increased focal OPLL with cord compression/kyphosis. He successfully underwent a second operation consisting of a posterior C6–T5 fusion that resulted in adequate T2–3 stabilization and cord decompression.

CONCLUSION

Here, we presented a 64-year-old myelopathic male who underwent an initial a double-door laminoplasty from C3–7 and laminectomy between T1–4 for OPLL. Ten years later, with recurrent myelopathy and increased T2–3 motion with kyphosis/OPLL, he successfully underwent a C6–T5 instrumented fusion.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

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