

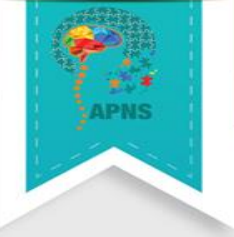
# **DOES REMOVAL OF HYPERTROPHIC POSTERIOR LONGITUDINAL LIGAMENT ALONG WITH CERVICAL DISCECTOMY AFFECT SURGICAL OUTCOME IN ANTERIOR CERVICAL DISCECTOMY AND FUSION?**

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**National Hospital of Sri Lanka**

# OBJECTIVES



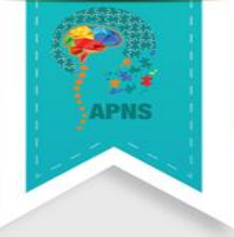
- Does hypertrophy of posterior longitudinal ligament (HPLL) significantly contribute to cervical myelopathy, when associated with cervical disc herniation (CDH)?

# OPLL

- Ossification of Posterior Longitudinal Ligament (OPLL)
- Enthesopathy
- Conditions that result in progressive inflammation of the tendons and ligaments of the axial or appendicular skeleton (or both) and **subsequent degeneration and calcification.**



# HPLL



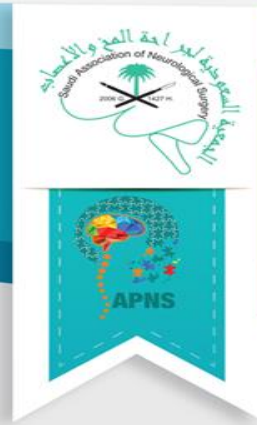
- The posterior longitudinal ligament is normally 1 or 2 mm thick
- Dynamic process
- Hypertrophy is an initial stage of the degenerative process towards OPLL



# HPLL



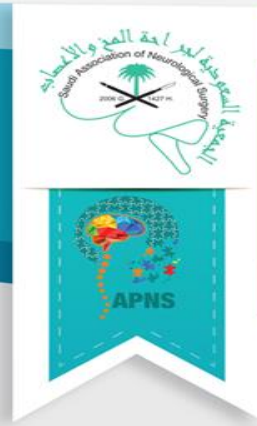
# OPLL



- Posterior longitudinal ligament undergoes **degenerative changes** with subsequent tissue **hyperplasia**, fibrocartilaginous cell proliferation, and subsequent **ligamentous hypertrophy**.
- Endochondral bone growth leads to collagen deposition and mineralization and the formation of **punctate ossification centers**.
- As the ossification centers coalesce, mature lamellar bone with haversian canals results and leads to active bone marrow production and **frank ossification**.

# OBJECTIVES

- A retrospective analysis was done to review the surgical outcome in order to compare the effects of removal of hypertrophied posterior longitudinal ligament (PLL) versus its' preservation during ACDF in association with CDH.



# MATERIALS & METHODS

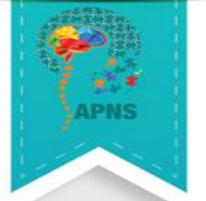


**STUDY SAMPLE :** 56 patients presenting with CDH and associated HPLL to a single institution (National Hospital of Sri Lanka)

**STUDY PERIOD :** 4 years period from 1<sup>st</sup> October, 2012 to 30<sup>th</sup> September, 2016.

**STUDY DESIGN :** Retrospective analytical study

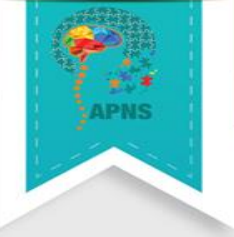
# MATERIALS & METHODS



- Out of 451 patients who presented to the neurosurgical clinic at NHSL with features of cervical myelopathy or radiculopathy, 81 selected who presented with CDH and associated HPLL.
- Patients with segmental type HPLL was excluded. (25)
- Patients who had more than two level disc protrusions and who had undergone previous cervical spine surgery were excluded.
- Patients with disc **herniations and spondylosis/ligamentum flavum hypertrophy** - if spondylosis was severe and more predominant - excluded

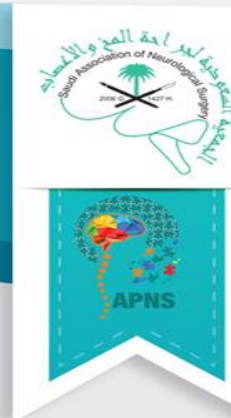


# MATERIALS & METHODS






- **All the patients**
- Underwent CT and MRI scans to confirm the presence of CDH and HPLL.
- HPLL confirmed by MRI
- CT and lateral X-ray of cervical spine done to exclude OPLL.
- Liaison with radiologist

# MATERIALS & METHODS



All of them were evaluated on presentation with the Japanese Orthopaedic Association (JOA) score in order to categorize them according to the severity of symptoms

Rationale  More symptoms  More severity  need more decompression

Compression  $\propto$  disc + HPLL

Removal or preservation of PLL was decided upon the severity of symptoms where preservation done for JOA score of 12-15 (grade 1) , and its excision performed when JOA was below 12 (grade 2/3)

# MATERIALS & METHODS



All the patients were treated by a single/two level anterior cervical discectomy and fusion (ACDF) with cages performed by a single surgeon.

Surgical outcome was evaluated at the end of 6 months according to Odom's criteria.

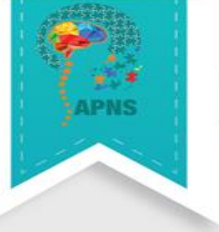
# RESULTS



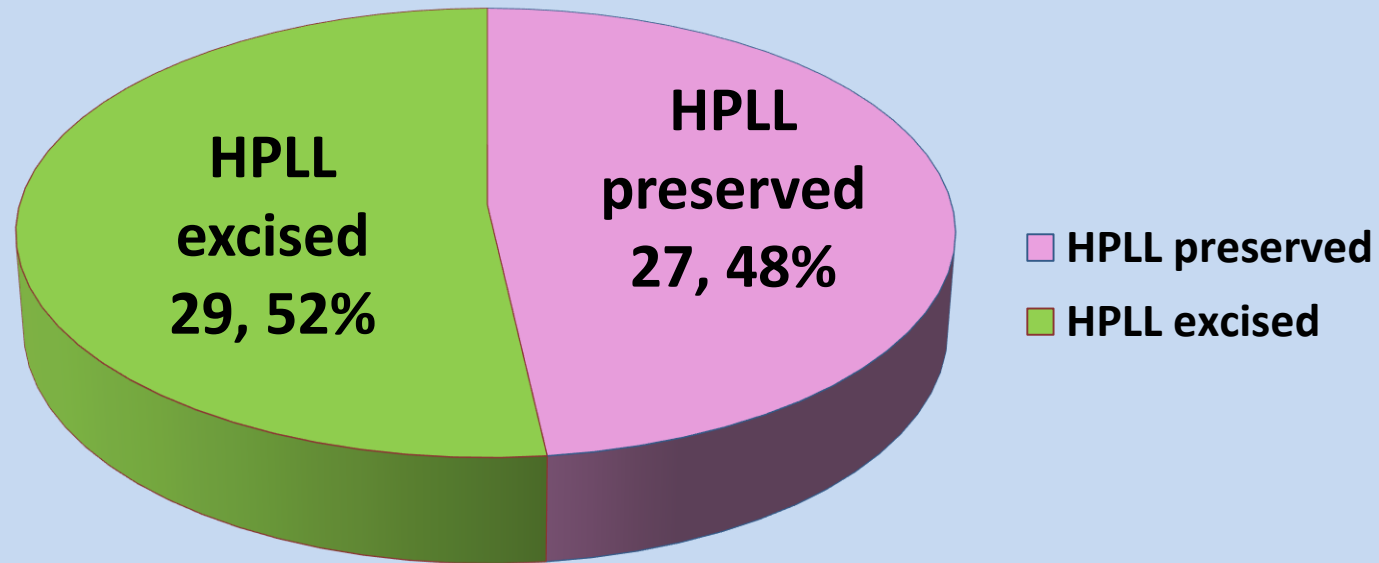
- 36 males and 20 females
- PLL removed in 29. (51.2%)
- PLL preserved in 27. (49.8%)
- 64.3% single level ACDF (36/56)
- 35.7% two level ACDF (20/56)
- Most common variety of HPLL → continuous ( 54%) →  
mixed (30%) → localized (16%)



# RESULTS

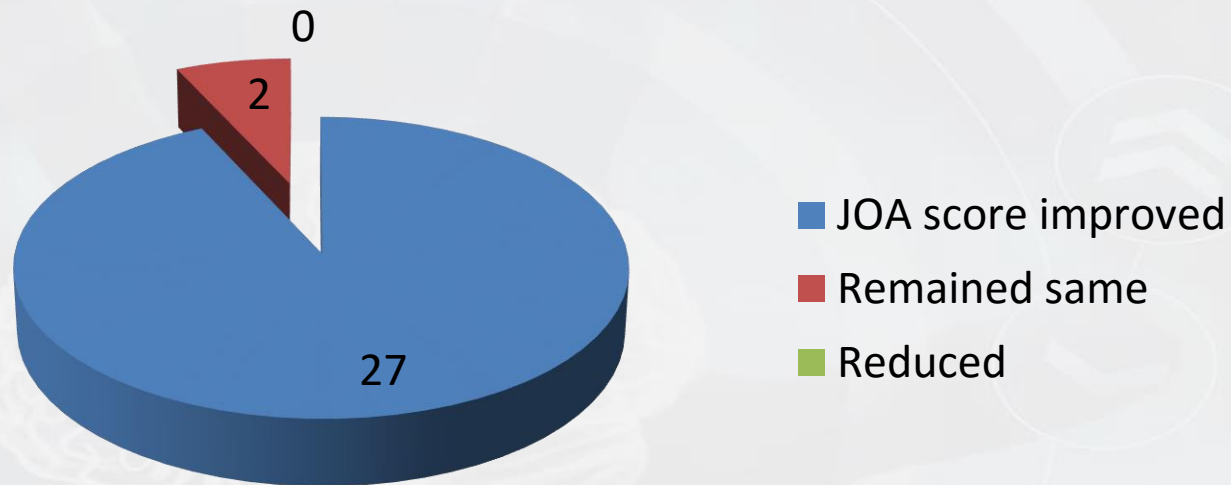


## HPLL PRESERVED/EXCISED



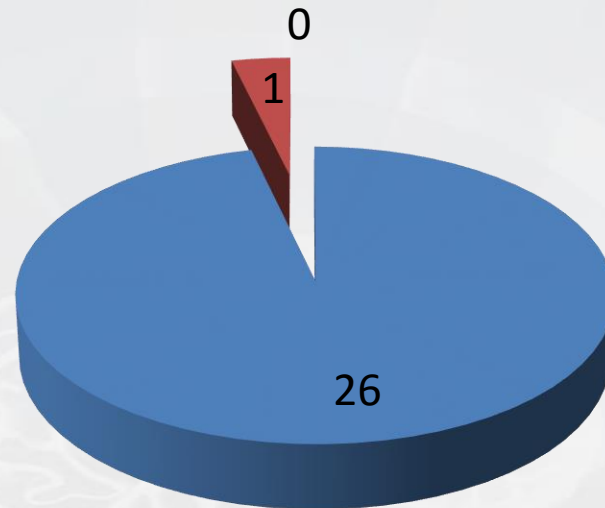
# JOA SCORE

- JOA score in PLL excised group



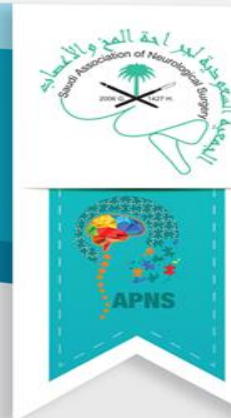
# JOA SCORE

- JOA score in PLL preserved group

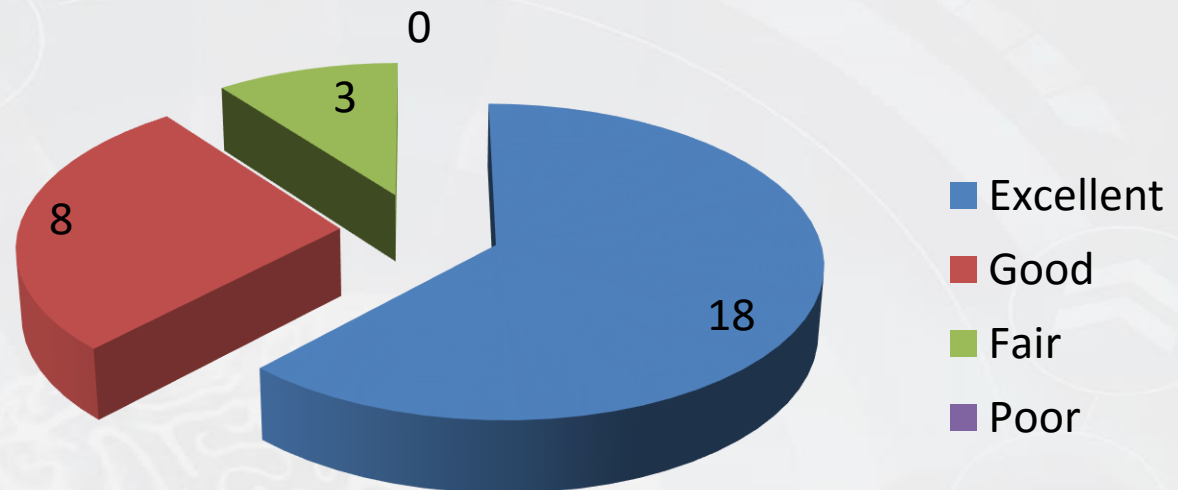


- JOA score improved
- Remained same
- Score reduced

# ODOMS CRITERIA

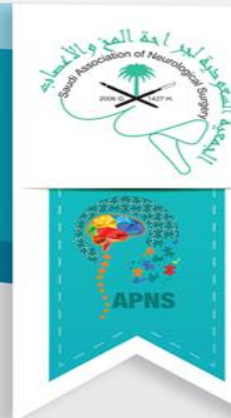


- PLL excised group

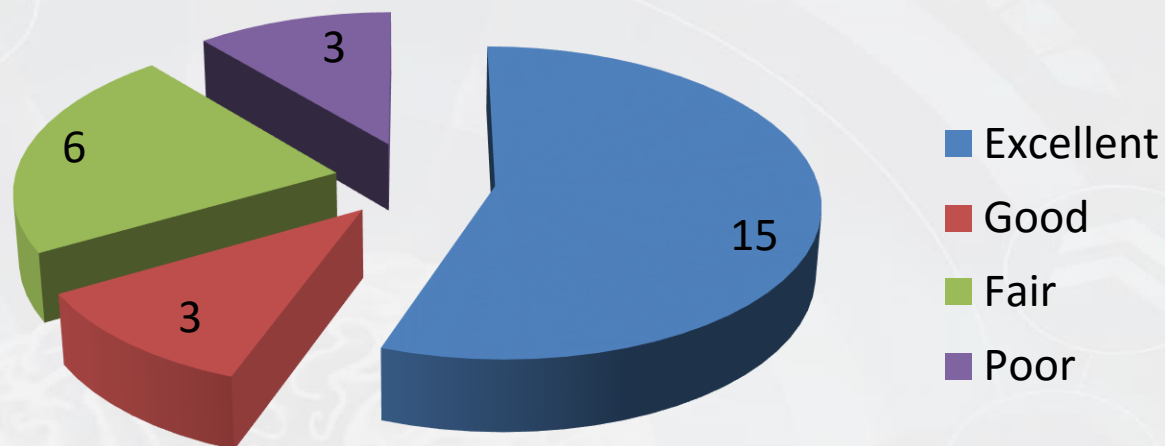




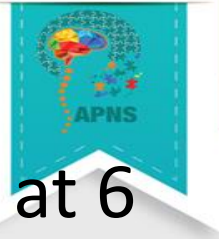
# ODOMS CRITERIA

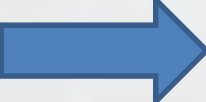



- PLL preserved group



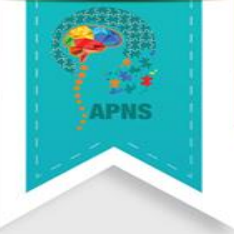
# OUTCOME



- PLL excised group – **26/29 (89.6%) excellent or good outcome** at 6 months according to Odoms criteria.
- PLL preserved group – **18/27 (74.1%) excellent or good prognosis** at 6 months.
- Patients who didn't have excellent/good outcomes in PLL excised group  All continuous type.
- In PLL preserved group who didn't have similar outcomes  73% continuous and 27% mixed type HPLL.
- The difference in outcome was statistically **significant at a P value of 0.036 and OR of 4.33 with CI of 1.03-18.23.**

# CONCLUSION

***Excision of HPLL has a significant effect on surgical outcome when performed along with cervical discectomy during single/ two level ACDF in selected patients.***



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