

Internal Anal Sphincter Thickness Relationship to Patient Symptoms and Clinical Obstetric Findings

Abstract No.91

Imperial College
London

McHayle A¹, Bhide A², Morris E¹, Tailor V², Digesu A², Fernando R², Khullar V².
1. Imperial College London University, 2. Urogynaecology Unit, Imperial College London.

Introduction

- The internal and external anal sphincters (IAS & EAS) form the anal sphincter complex (ASC), vital in the maintenance of anal continence
- The IAS is thought to elicit the resting pressure of the anal canal and maintain passive continence
- This study aims to investigate the relationship between IAS muscle thickness and symptoms of anal incontinence in postpartum women who have suffered an obstetric anal sphincter injury (OASI)
- **Hypothesis: women with reduced IAS muscle mass will have worse function and hence more symptoms**

Methods

Participants:

- 89 women attending Pelvic Floor Clinic following OASI

Symptoms:

- Assessed using Q3-6 of the validated Birmingham Bowel and Urinary Symptoms Questionnaire (BBUSQ-22) and clinical interview.

Clinical Assessment:

- OASI were graded at delivery according to Sultan classification.
- Anal manometry was performed to assess anal pressures.
- Endoanal ultrasound (EAUS) assessed IAS integrity. IAS thickness measurements were taken at the positions shown in Figure 1 blinded from degree of tear and patient symptoms.

Analysis:

- Anal pressures, symptoms and IAS measurements were compared

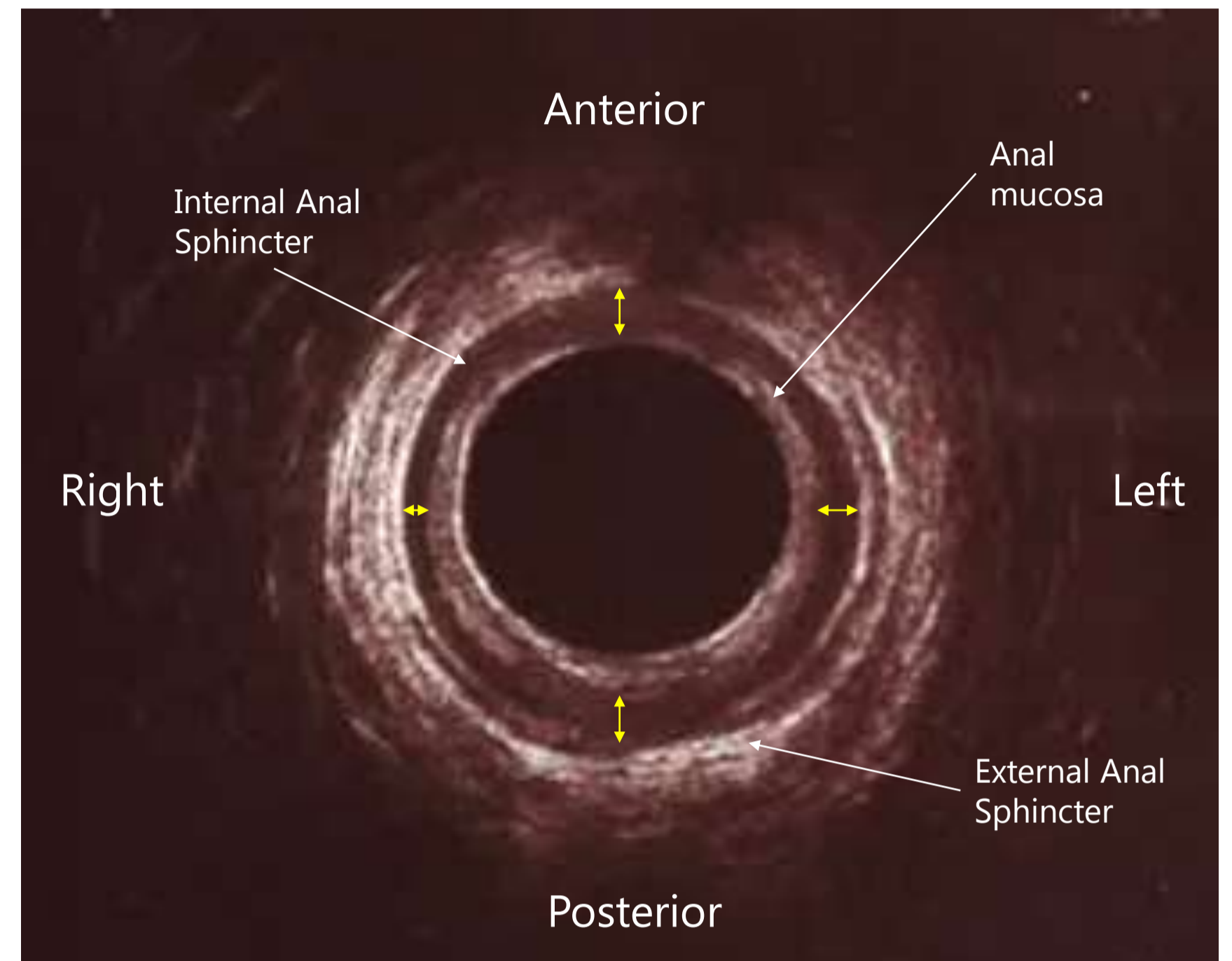


Figure 1. Endoanal ultrasound image showing regional anatomy and anterior, left, right and posterior positions where measurements were taken of the internal anal sphincter.

Results

	N	% with symptoms	Median average IAS thickness	Median Squeeze Pressure	Median Resting Pressure
3a	25	60.0	1.39	85	45
3b	48	77.1	1.40	80	45
3c	10	90.0	1.30	75	38
4	6	100.0	1.61	73	40
Entire cohort	89	75.0	1.40	80	45

Table 1. showing patient symptom severity, median average overall IAS thickness, median squeeze and resting pressure according to Sultan classification degree of OASI.

IAS average thickness measurement in women with and without symptoms of anal incontinence

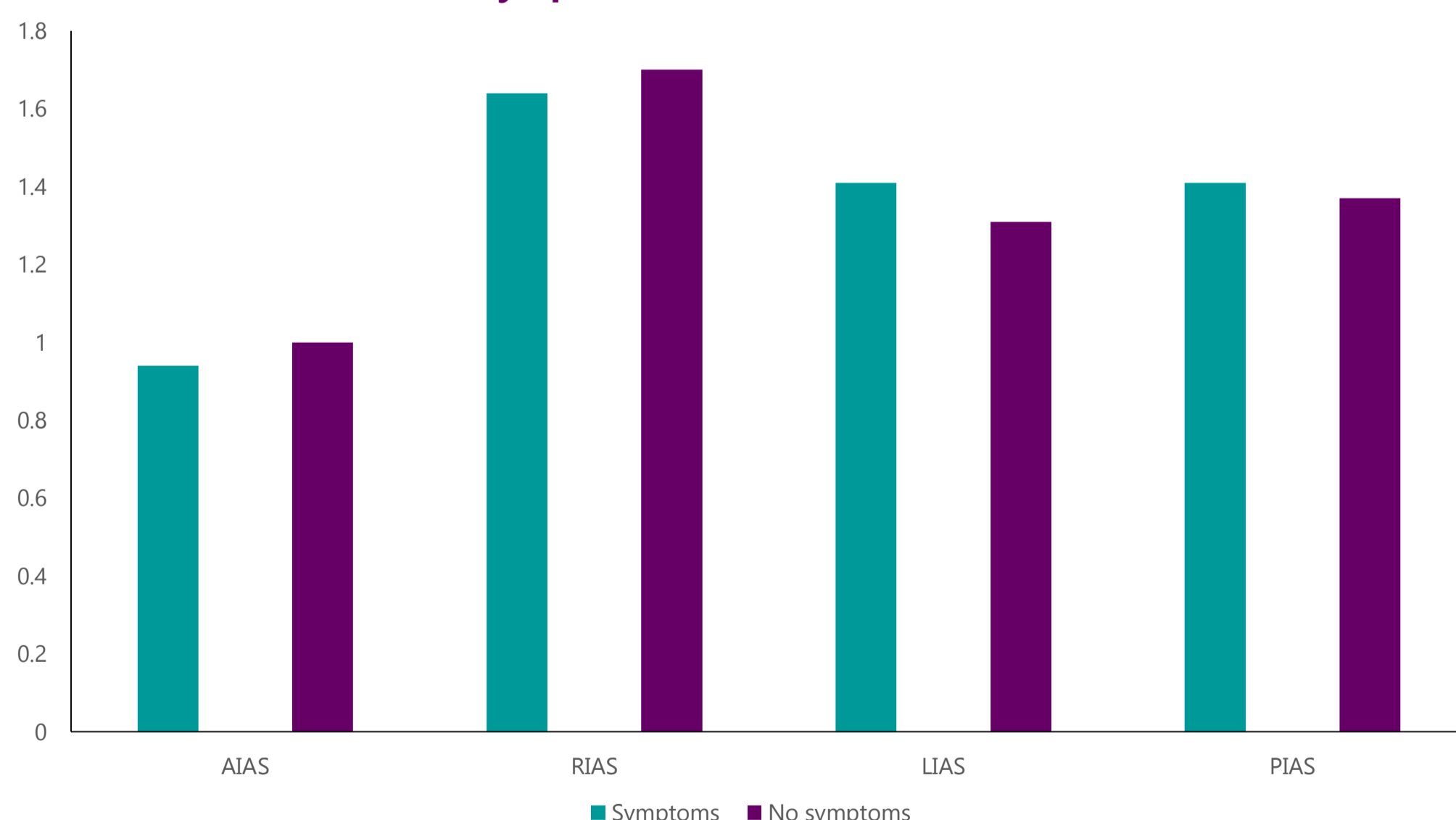


Figure 2. Graph showing the median IAS thickness measurement in those with and without symptoms of anal incontinence at the anterior (AIAS), left (LIAS), right (RIAS) and posterior (PIAS) position. There was no significant difference in the muscle thickness in those with and without symptoms.

- Spearman's correlation showed a positive correlation between patients resting and squeeze pressures ($r_s=0.619$, $p<0.001$).
- Mann-Whitney U showed those with injury to the IAS had significantly lower resting ($p=0.019$) and squeeze pressures ($p=0.023$).
- No relationship was found between resting pressure and patients' symptoms ($r_s= -0.167$, $p=0.118$). There was however a weak negative correlation between squeeze pressures and symptoms ($r_s= -0.274$, $p=0.009$).
- Surprisingly, Spearman's correlation found no relationship between the IAS thickness at any point and the anal pressures ($p>0.05$).
- Mann-Whitney U showed no difference in the IAS thickness of those with and without symptoms ($p=0.924$) as shown in Figure 2.

Conclusion

No relationship exists between the thickness of the IAS muscle and it's function or anal continence status in postpartum women following an OASI. Injury involving the IAS is associated with lower anal resting pressures but this is not related to symptom severity. A relationship exists between the squeeze pressure of the anal canal and patients symptoms so further research is needed to identify if a relationship also exists with the thickness of the EAS muscle.