**Ultrasound evaluation and grading of varicoceles - compliance with European Society of Urogenital Radiology guidelines**

**Descriptor:**

The aim of this audit is to evaluate the ultrasound reporting practices of varicoceles including their grading as per European Society of Urogenital Radiology Scrotal and Penile Imaging Working Group (ESUR-SPIWG).

**Background:**

 Varicoceles are a common urological problem. Although often detected incidentally, they are more prevalent in patients with infertility or chronic scrotal discomfort and represent the commonest potentially correctable cause of male infertility. Ultrasound (US) is the imaging modality of choice for varicocele evaluation. There are several existing grading systems for assessment of varicoceles and Sarteschi classification is the one favoured by ESUR-SPIWG guidelines. Sarteschi grading system has 5 grades based on the presence or absence of venous reflux as triggered by the valsalva manoeuvre during supine and erect positions at 3 anatomical sites; inguinal, supratesticular and peritesticular areas. Evaluation for reflux is critical in the diagnosis of varicocele and prediction of treatment outcomes. A reflux that lasts more than 2 second triggered by valsalva is strongly associated with postoperative improvement in semen quality. The ESUR-SPIWG has recently published a guideline with the aim of producing evidence-based recommendations for standardizing the technique and interpretation of the US examination.

## The Cycle

**The standard:**

All ultrasound reports for varicocele assessment should meet the ESUR-SPIWG guidelines as the following:

1. Testicular volume should be measured routinely using Lambert's formula: (length x width x height x 0.71).

2. The location (inguinal, supratesticular or peritesticular) and the diameter of the largest vein should be documented in both supine and erect positions.

3. The level (inguinal, supratesticular or peritesticular) and the duration of venous reflux should be documented in supine and erect positions.

**Target:**

100% of all ultrasounds reports for varicocele assessment should meet all standards as per ESUR-SPIWG guidelines.

## Assess local practice

**Indicators:**

The percentage of ultrasound scans and reports which adhere to each of the standards.

**Data items to be collected:**

Was the testicular volume measured?

Were the location and the diameter of the largest vein documented in both supine and erect positions?

Were the level and the duration of venous reflux documented in both supine and erect positions?

The designation of the operator (sonographer, Radiology trainee or Consultant Radiologist).

**Suggested number:**

30 cases

**Suggestions for change if target not met:**

1. Publicise the standards for ultrasound doppler assessment of varicoceles, through in-person departmental radiology meetings and dissemination of written material to radiologists and sonographers.

2. Create an US report template, in order to improve standardization of scanning techniques and reports.

3. Re-audit following intervention to assess for improvement in practice. Continue the audit spiral, to ensure sustained compliance with the standards.

**Resources:**

1. Radiology information system (RIS) to review the details of ultrasound reports.

2. Computer software, such as Microsoft Excel, for recording and analysing data.

**References:**

1. Freeman S, Bertolotto M, Richenberg J, Belfield J, et al. Ultrasound evaluation of varicoceles: guidelines and recommendations of the European Society of Urogenital Radiology Scrotal and Penile Imaging Working Group (ESUR-SPIWG) for detection, classification, and grading. Eur Radiol. 2020 Jan;30(1):11-25.
2. Jungwirth A, Giwercman A, Tournaye H et al. European Association of Urology guidelines on male infertility: the 2012 update. Eur Urol 2012,62(2):324–332
3. Agarwal A, Deepinder F, Cocuzza M et al. Efficacy of varicocelectomy in improving semen parameters: a new meta-analytical approach. Urology. 2007, 70(3):532–538.

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