INDICATIONS FOR TREATMENT OF THE ADOLESCENT VARICOCELE

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INTRODUCTION

• **VARICOCELE**: ABNORMAL DILATATION OF THE PAMPINIFORM PLEXUS OF VEINS OF THE TESTIS

• **EXACT ETIOLOGY**: REMAINS UNCERTAIN

• **HYPOTHESES**: RELATES TO THE ANATOMY OF TESTICULAR VASCULARISATION

• **ANATOMICAL DIFFERENCES BETWEEN LEFT AND RIGHT VENOUS**
  \(\Rightarrow\) **PRIMARILY LEFT VARICOCELE**.
INCIDENCE

- AGE-DEPENDENT
- BEFORE 10 YEARS OLD: LESS THAN 1% OF BOYS
- INCIDENCE INCREASES WITH AGE AFTER 10
- 15-20% INCIDENCE IN BOYS OF ABOUT 14-15 YEARS OLD
- 20-40% IN MEN WITH FERTILITY PROBLEMS
- LINK BETWEEN THE PRESENCE OF A VARICOCELE AND FERTILITY (REGARDING TEMPERATURE, VOLUME AND GROWTH OF THE TESTIS AND THE SEMEN ANALYSIS)
DIAGNOSIS

• PATIENT IN STANDING AND SUPINE POSITIONS

• CATEGORIZED INTO THREE GRADES (DUBIN AND AMLAR CRITERIA):
  • GRADE I: NOT VISIBLE IN SUPINE POSITION, PALPABLE ONLY WITH A VALSALVA MANEUVER IN A STANDING POSITION
  • GRADE II: NOT VISIBLE IN SUPINE POSITION, PALPABLE IN THE STANDING POSITION WITHOUT A VALSALVA MANEUVER
  • GRADE III, VISIBLE THROUGH THE SCROTUM IN THE STANDING POSITION WITHOUT A VALSALVA MANEUVER
PREDICTING FUTURE INFERTILITY

- VARICOCELE GRADE
- ASYMMETRIC TESTICULAR GROWTH
- TOTAL TESTICULAR VOLUME
VARICOCELE GRADE

- Adult studies shown that grade and size of the varicocele are associated with ipsilateral hypotrophy and abnormal semen parameters.

- Diamond et al. could not identify any difference in semen parameters or testicular volume differentials between Grade 2 vs 3 varicoceles.

- Zampieri et al. identified greater ipsilateral hypotrophy amongst Grade 3 vs Grade 2 varicoceles.

- Mori et al. were not able to identify any difference in testicular volume or sperm integrity between Grade 2 and 3 varicoceles in adolescents.
PERCENT ASYMMETRY

% ASYMMETRY = \[\frac{\text{VOLUME OF RIGHT TESTICLE} - \text{VOLUME OF LEFT TESTICLE}}{\text{VOLUME OF RIGHT TESTICLE}}\] × 100

VOLUME OF TESTICLE = (LENGTH × WIDTH × DEPTH) × 0.71 OR 0.52

• MEASUREMENTS OBTAINED BY ULTRASOUND DEPENDING UPON WHO IS OBTAINING THE MEASUREMENTS

• → CUT OFF VALUES TO INDICATE A POSSIBLE FUTURE PROBLEM

• DIAMOND ET AL. FINDING 59% OF TANNER 5 BOYS WITH >20% ASYMMETRY HAVE A TMC OF LESS THAN 10 MILLION → CLEARLY ABNORMAL VALUE

• → USING ASYMMETRY AS A GUIDELINE FOR DETERMINING WHO SHOULD BE FOLLOWED AND WHO SHOULD UNDERGO SURGERY
SEMEN PARAMETERS

• 1991, HAANS ET AL. FOUND DECREASED TOTAL SPERM COUNTS IN 17 TO 20 YEARS OLD WITH A LEFT VARICOCELE AND IPSILATERAL HYPOTROPHY

• FIVE YEARS LATER, PADUCH AND NIEDZIELSKI IDENTIFIED STATISTICALLY SIGNIFICANT DIFFERENCES IN 17 TO 19 YEARS OLD WITH AND WITHOUT A VARICOCELE

• 2002, CAYAN ET AL. DEMONSTRATED THAT VARICOCELECTOMY COULD CORRECT ABNORMAL SEMEN PARAMETERS IN 15 TO 19 YEARS OLD WITH A LEFT VARICOCELE, IPSILATERAL HYPOTROPHY AND ABNORMAL PRE-VARICOCELECTOMY SEMEN PARAMETERS
INDICATIONS FOR VARICOCELECTOMY

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• VARICOCELE ASSOCIATED WITH A SMALL TESTIS
• ADDITIONAL TESTICULAR CONDITION AFFECTING FERTILITY
• PATHOLOGICAL SPERM QUALITY (IN OLDER ADOLESCENTS)
• BILATERAL PALPABLE VARICOCELE
• SYMPTOMATIC VARICOCELE
PATERNITY OUTCOMES

- CAYAN ET AL., ZAMPIERI ET AL., AND MOURSY ET AL. FOUND AFTER TEENAGE VARICOCELECTOMY SEMEN ANALYSES BECAME NORMAL
- SALZHAUER ET AL. AND PAJOVIC AND RADOJEVICI FOLLOWING ADOLESCENT AND TEENAGE VARICOCELECTOMY → HIGH INCIDENCE OF PATERNITY
CONCLUSIONS

• STRONG RELATIONSHIP BETWEEN IPSILATERAL HYPOTROPHY AND ABNORMAL SEMEN PARAMETERS IN BOTH ADULTS AND TEENAGE BOYS WITH A LEFT VARICOCELE.

• ASYMMETRY AND SEMEN PARAMETERS CAN WORSEN WITH TIME

• BEST TO OPERATE EARLY WHEN THE INDICATIONS ARE APPROPRIATE: THE PRESENCE OF 15% OR 20% ASYMMETRY OR GREATER, OR TTV IS LOW FOR A PARTICULAR TANNER STAGE.

• WAITING UNTIL A TANNER 5 STAGE OR 17 OR 18 YEARS OF AGE IS REACHED WHEN IT IS EASIER FOR A PHYSICIAN TO REQUEST A SEMEN ANALYSIS LIKELY WILL YIELD ABNORMAL SEMEN PARAMETERS

• WAITING UNTIL AN INFERTILITY PROBLEM PRESENTS DOES NOT SEEM TO BE THE BEST OPTION
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