

Patients with suspected XY PGD based on history and physical examination

Genetic testing

Chromosomal analysis, including karyotype and array CGH

FISH for *SRY*

If *SRY* is present and chromosome analysis and array CGH are normal, consider sequence analysis for *SRY*, *NRSA1*, and *DHH*.

If these sequences are normal, verify coverage of *NROB1* and *WNT4* on array CGH testing and if not well covered, targeted duplication analysis may be considered

If other syndromic features are noted on physical exam, specific genetic testing should be sent:

1. *SOX9* sequencing if patient has findings consistent with campomelic dysplasia
2. *ATRX* sequencing if patient has evidence of alpha-thalassemia X-linked mental retardation
3. *WT1* sequencing if patient has findings consistent with Denys-Drash

Hormonal Evaluation

Basal LH and FSH may be elevated depending on age¹

Exclude adrenal steroid biosynthesis defects, ruling out CAH

Serum testosterone and AMH- will be low

hCG Stimulation test- will show inadequate rise of testosterone in response to hCG

Surgical Management

Can be combined with other genital reconstructive procedures

Consider sending tumor markers including AFP, LDH, and β -hCG if patient has evidence of gonadal mass on pre-operative imaging and/or discordant pubertal characteristics.²

Laparoscopy and Gonadal biopsy may be indicated.

Histology will reveal a spectrum of under-developed gonads.

See Figure 3 "Diagnostic and Management Algorithm for patients with Confirmed XY Gonadal Dysgenesis" for further guidance.

Imaging

Pelvic Ultrasound or MRI to evaluate internal genital anatomy and position of gonads.

May see absent to fully developed Müllerian structures.

Gonads may be located in the abdomen, inguinal region, or in the scrotum

¹ pre-pubertal aged children will likely have LH and FSH that are low (or in the normal range for a pre-pubertal child), whereas post-pubertal aged children will have elevated LH and FSH.

² The presence of positive tumor markers indicates the necessity for a staged surgical procedure (laparotomy instead of laparoscopy)