# The Canal of Nuck: A Rare Defective Obliteration in Females

**Arissa Schweiss PA-S2, Brennan Bowker PA-C, Magdalena Lukaszewicz PA-C**

**Quinnipiac University Physician Assistant Program**

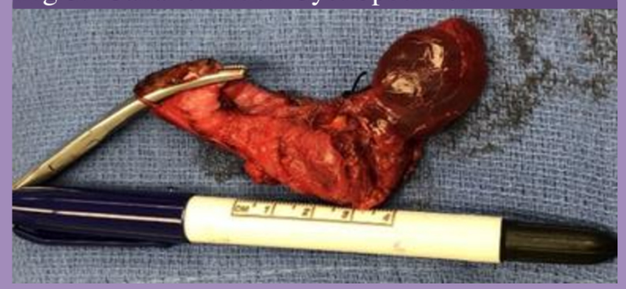
## Introduction

- Inguinal groin masses are a common presentation with a wide range of differential diagnoses.
- The processus vaginalis in females should close by 40 weeks of gestation, although in rare cases it fails to close, developing an abnormality called the Canal of Nuck.[1]
- The Canal of Nuck creates an outpouching that leaves an opening at the inguinal internal ring, allowing structures of the reproductive system to herniate through to the labia majora.[2]
- One third of patients also have an inguinal hernia at the time of presentation. These abnormalities may be misdiagnosed which can lead to strangulation, ovarian torsion, and infertility. [3, 4]
- Diagnosis using ultrasound and Magnetic Resonance Imaging (MRI) will show dilation at the inguinal canal with an associated distal cystic lesion. [5]
- Due to the extremely rare occurrence and frequent misdiagnosis, the prevalence is currently unknown, but occurrence in infants has shown to be more common. [6]

**Table 1. Differential Diagnosis**

| |
|---|
| Femoral hernia |
| Inguinal hernia |
| Bartholin gland cyst |
| Lipoma |
| Abscess |

**Fig 3. Canal of Nuck Cyst Specimen**



## Case Description

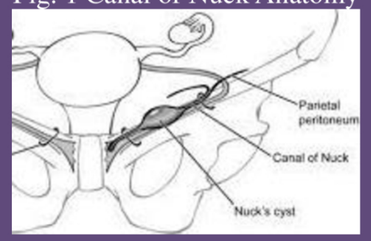
### *History*

- A G0P0 35-year-old female presented with constant, worsening left groin pain with an associated mass that started 4 months ago
- Pain increased with prolonged standing. No relieving factors.
- Denied any radiating pain, erythema, nausea, vomiting, vaginal discharge obstipation, recent STDs, or fevers.
- No significant past medical history, surgical history, or family history.
- Medications: Vitamin D PO 1000 IU/day.
- OBGYN: Last month period 1 week ago. Up to date on annual appointments.
- Social history: Married in a monogamous relationship.
- Review of Symptoms: Mild dyspareunia. Remainder unremarkable.

### *Objective Findings*

- Blood pressure: 118/79 mmHg
- Well-appearing, in no acute distress
- Abdomen soft, non-tender, non-distended. No guarding
- Fluctuant, irreducible, non-erythematous protrusion over the left labia majora that was tender to palpation and did not transilluminate. No adnexal or cervical motion tenderness
- Dull and sharp touch of all extremities intact
- Rest of exam within normal limits

Fig. 1 Canal of Nuck Anatomy[8]




### *Diagnostic Results*

- CBC, BMP unremarkable
- *Ultrasound*
  -Rim enhancing cystic structure measuring 2.8 cm x 4.2 cm x 7.5 cm in the left inguinal canal.
- *Magnetic Resonance Imaging pelvis with IV contrast*
  - Cystic structure centered in the left anterior pelvic region extending along the round ligament into the left inguinal canal. Findings favored to reflect a Canal of Nuck cyst.
- *Tissue biopsy*
  - Cystic lesion lined by focally hyperplastic mesothelial cells and denuded reactive fibroblastic tissue involving fibroadipose tissue and skeletal muscle consistent with patent canal of Nuck. Focus of endometriosis.

**Fig 2. Hospital Course**

**Referred to general surgery by primary care** → **Inconclusive ultrasound required further imaging using MRI** → **Definitive laparoscopic surgical treatment for Canal of Nuck cyst** → **Observation for leg numbness and tingling likely due to obturator nerve involvement** → **Discharged with resolution of all symptoms and follow-up**

**Fig 4. Ultrasound of Left Inguinal Canal**

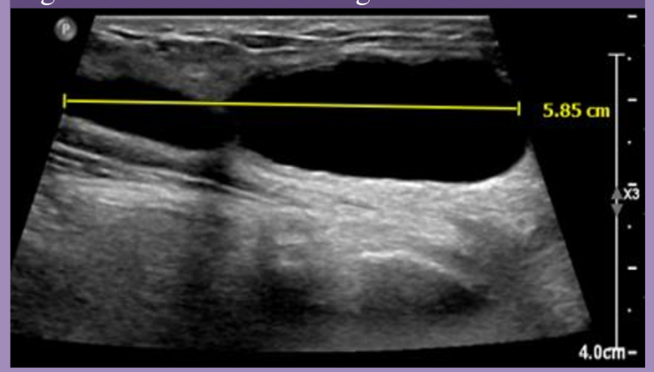
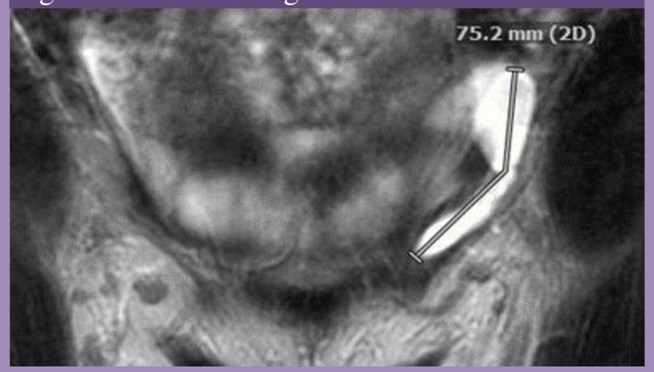



**Fig 5. MRI of Left Inguinal Canal w/ Contrast**




## Discussion

### *Laparoscopic Versus Open Surgical Approach*

- The laparoscopic approach has shown to be superior to the open approach. [7]
- Laparoscopic approach provides direct visualization leading to a more efficient diagnosis and cyst excision. [7]
- Excludes other intraabdominal pathologies that may be present. [7]

## Clinical Outcome

- Patient tolerated excision of left Canal of Nuck cyst and repair with mesh very well.
- Although numbness and tingling were experienced post operatively in the PACU, symptoms resolved shortly after.
- At 1 week follow-up incisions were clean. dry, and intact and patient denied any symptoms.

## Conclusions

- This rare developmental disorder is important for providers to consider within their differential diagnosis when examining a female with an inguinal mass.
- Reproductive contents can herniate through the internal ring into the labia majora and are often misdiagnosed as more common conditions such as inguinal hernias, cysts, and abscesses.
- Out of the minimal cases reported, most were found intraoperatively, and the diagnostic imaging needed to diagnose the condition were not utilized during initial work-up. [5]
- If misdiagnosed, women can suffer from infertility, ovarian torsion, necrosis, or infection.

## References

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