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## Case 2: An adolescent athlete with chronic back pain

Kirpalani Amrit  
*London Health Sciences Centre*

Victor Istasy  
*London Health Sciences Centre, victor.istasy@lhsc.on.ca*

Rodrick Lim  
*London Health Sciences Centre, rod.lim@lhsc.on.ca*

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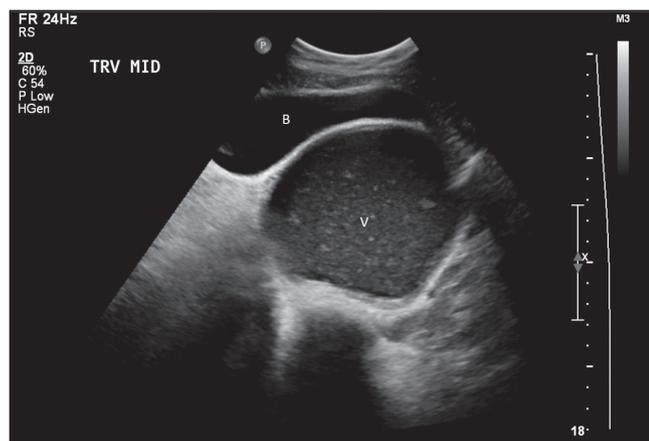
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## Case 2: An adolescent athlete with chronic back pain

A 15-year-old female presented to the emergency department with severe pelvic and back pain, on the background of chronic pelvic pain. She reported that she had been experiencing pain for approximately two years, but that her pain had become increasingly disabling over the past six weeks. Her pain was located in both lower quadrants, with radiation to her back. She denied any fevers, chills, urinary symptoms or changes in her bowel movements. The patient had never experienced menses or any vaginal bleeding. She denied sexually activity, had never had a Pap smear, nor any sexually transmitted infections. She was a competitive figure skater but had been unable to continue in this activity because of the pain. She had been followed by sports medicine and despite physiotherapy had not improved. She was otherwise healthy, with no significant past medical conditions.

On examination, she was afebrile and her vital signs were all within normal limits. On abdominal examination, she had supra-pubic tenderness and a mass was palpated at the level of her umbilicus.

Bloodwork, including a blood count, was normal and a plain film of the lumbar spine was unremarkable. Point-of-care ultrasound (POCUS) led to the diagnosis (Figure 1).



**Figure 1)** Ultrasound of the lower mid abdomen (transverse plane) demonstrating abnormality. B Bladder; V Vagina

Correspondence (Case 2): Dr Rodrick Lim, Department of Paediatric Emergency Medicine, London Health Sciences Center, 800 Commissioners Road East, London, Ontario N6A 5W9. Telephone 519-685-8129, e-mail rod.lim@lhsc.on.ca

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**CASE 2 DIAGNOSIS: HEMATOMETROCOLPOS**

The gynecology team ruled out obstructive Mullerian anomalies, and confirmed an imperforate hymen. The patient underwent a hymenotomy and draining of the hematometrocolpos. Following the procedure, the patient returned to her previous baseline level of function, and was able to resume her athletic endeavours without pain.

Patients with congenital obstructing anomalies will experience primary amenorrhea, as did the patient in our case. The lack of outflow tract results in a proximal accumulation of blood in the vagina (hematocolpos), uterus (hematometra) and/or fallopian tubes (hematosalpinx). This may result in significant pain, which may be the primary complaint causing a patient to seek medical attention. As our case and others have demonstrated, a history of chronic pain and amenorrhea should prompt consideration of these entities.

The most common causes of congenital obstructive anomalies are imperforate hymen and obstructive Mullerian anomalies such as transverse vaginal septums. Under normal development, the hymen originates from the urogenital sinus, with the embryonic vagina. If the lumen of the urogenital membrane fails to form, the result is an imperforate hymen. It is estimated that, within North America, the incidence of imperforate hymen is 0.1%. Diagnosis of an imperforate hymen is typically via physical examination, with pelvic examination findings of an intact hymen, which may be bulging and have a blue-black appearance. Transverse vaginal septums result from the failed absorption of the tissue between the vaginal plate and the merged Mullerian ducts. Its incidence is estimated to be one in 70,000 females.

In previous case reports describing imperforate hymen, other presenting symptoms have included abdominal pain, chronic low back pain, constipation and urinary retention (1). Pain has typically been described as cyclical; however, chronic and acute-on-chronic presentations have also been described.

From previous reports of both low back and pelvic pain, two prevailing theories appear to be direct pressure onto nerve fibres and myofascial pain.

In our case, the patient was evaluated using POCUS. The use of POCUS for this diagnosis in the paediatric population has been reported once previously (2). The authors note that use of POCUS for suspicion of an imperforate hymen may facilitate gynecology referral and patient disposition, help evaluate the need for further imaging or surgical intervention, as well as enable assessment for possible complications such as hydronephrosis. These benefits were also gained by our team in this case. Our patient did not experience any further complications of her imperforate hymen, and she achieved full functional relief following surgical hymenotomy and emptying of her uterus. In terms of long-term complications, imperforate hymen is believed to not interfere with fertility, as opposed to vaginal septums, which may lead to pelvic endometriosis and infertility.

In conclusion, the presentation of imperforate hymen is varied, and emergency physicians should maintain a high index of suspicion in patients who present with abdominal, pelvic or back pain associated with amenorrhea.

Amrit Kirpalani MD  
Schulich School of Medicine & Dentistry  
Department of Paediatrics

Victor Istasy MD  
Department of Paediatrics and Medicine,  
Division of Emergency Medicine

Rodrick Lim MD, FRCPC, FAAP,  
Schulich School of Medicine & Dentistry,  
Department of Paediatrics and Medicine,  
Division of Emergency Medicine  
Children's Hospital at London Health Science Centre  
London, Ontario

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