

Anterior sacral myelomeningocele

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Anterior [sacral myelomeningocele](#) is an exceedingly rare form of [spinal dysraphism](#) characterized by protrusion of the [dural sac](#) anterior through a defect in the anterior aspect of the [sacrum](#) ^{1) 2)}.

These are labeled as Type 1B according to Nabors' classification ³⁾.

Etiology

The exact cause of ASMM is not fully understood, but it is believed to be related to a combination of genetic and environmental factors. Risk factors for ASMM include maternal folate deficiency, maternal diabetes, and certain genetic disorders.

North et al., ⁴⁾ have classified the possible mechanisms leading to ASM as:

a)

Congenital:

Sacral bone defect

Proliferation of arachnoid

Connective tissue disorders

b)

Degenerative: Ischemic lesion

c)

Traumatic: Nerve root avulsion or hemorrhage

d)

Iatrogenic: During surgery

The inheritance is autosomal dominant. [HLA](#) has been implicated in caudal dysgenesis because of analogy with disorders of the T-locus complex, a tail length-determining gene in mice that is linked to the major histocompatibility complex, H-2. Members of a 5-generation family with sacral defect and anterior meningocele (SDAM) were typed with polymorphic markers (dinucleotide repeats D6S89, D6S105, D6S109, and TCTE1) linked to HLA. Two-point and multipoint analyses exclude the HLA region as the location for the SDAM gene in this family ⁵⁾

Pathology

Associations

In approximately 50% of cases, associated malformations are found, including ⁶⁾:

[spina bifida](#)

[spinal dysraphism](#)

[bicornuate uterus](#)

[imperforate anus](#) It can occur as part of the [Currarino triad](#) ⁷⁾.

Clinical features

Symptoms of ASMM may include a sac-like protrusion from the lower back or buttocks, difficulty with bowel and bladder control, lower extremity weakness, and foot deformities.

The pelvic mass induces symptoms mainly because of its pressure on surrounding organs. Obstipation and urinary symptoms are common. In females, complications due to prolonged or obstructed labour and infections are serious and can be fatal. The radiological manifestation is quite typical. It is important to be aware of anterior sacral meningocele in order to reach the right diagnosis, and to suspect it when typical symptoms are present ⁸⁾

Diagnosis

ASMM is typically diagnosed during a [prenatal ultrasound](#) or shortly after birth.

Radiographic features

Plain radiograph

Scimitar sacrum is a classically described finding on plain film.

Anomalous caudal cell mass development can manifest as tight filum terminale, caudal dysgenesis, terminal myelocystocele, anterior sacral meningocele or sacrococcygeal teratoma. Lower spinal cord development occurs simultaneously and in topological proximity to the developing lower gastrointestinal and genitourinary tracts, leading to coexistent malformations. We review the embryology of the caudal cell mass, describe the role of antenatal and postnatal imaging for diagnosing, staging, prognosticating and guiding intranatal or postnatal intervention for developmental anomalies of this region and briefly discuss clinical manifestations and treatment goals and strategies. An overview of antenatal imaging diagnosis of associated multisystem abnormalities will be provided where applicable ⁹⁾

Differential diagnosis

General imaging differential considerations include:

[tailgut duplication cyst](#)

[presacral neurenteric cyst](#)

Treatment

[Anterior sacral myelomeningocele treatment.](#)

Case reports

[Anterior sacral myelomeningocele case reports.](#)

¹⁾

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