Patent urachus:

 Definition: Patent urachus is a persistence after birth of the tubular connection between the bladder and umbilicus. The urachus drains the bladder into the allantoic sac during gestation. Urine flow should gradually changes, with some urine entering the amniotic sac through the urethra in later gestation. At birth, with umbilical cord rupture the urachus should be closed, and urine should be voided through the urethra. Foals with a patent urachus may dribble urine from the urachus during or after urination or may simply present with a constantly wet umbilical stump.

Etiology: A variety of causes have been suggested for failure of the urachus to close and completely involutes. Early closure or legation of the umbilical cord, inflammation, infection, and excessive physical handling of the neonate have been implicated. Rather than being the original caused?? Hospital admission, patent urachus develops as a complication of hospitalization in a significant percentage of foals in neonatal intensive care.

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 Clinical signs and differential diagnosis: Differential diagnosis includes concurrent infection of the navel (omphalophlebitis) by:- Ultrasound may assist the diagnosis and determine the involvement of umbilical arteries or vein. Moist hairs around the umbilicus and visualization of fluid coming for the navel are diagnostic.

Clinical pathology: Identification of concurrent infections essential. A complete physical examination should be performed. F abnormalities are noted, serum IgG, complete blood count, and urinalysis are helpful for detecting susceptibility to infection and presence of systemic or urinary tract infection.

 Pathophysiology: Congenital patent urachus caused by excessive torsion on the umbilical cord in utero occurs in 6% of normal foals. The obstruction of the urachus caused by the torsion cause retention of urine in the bladder and overdistends the proximal urechus, which interferes with normal involution. Infection of umbilical structures or the urachus itself may result in inflammation and failure to completely involute. In a review of 16 cases of umbilical cord infections in foals, 13 had patent urachus. The majority of these foals had acquired patent urachus after birth, with the youngest age of onset 3 days and the mean age of onset 12 days.

Excessive manipulation and improper lifting of the foal’s abdomen in the presence of high urethral sphincter tone may force urine within the bladder out into the involuting urachus. In our experience farms have experienced outbreaks of patent urachus when procedures (such as tests for failure of passive transfer) have been implemented that require handling of foals in the first 12 to 24 hours of life. A similar cause may be responsible for the increased incidence of patent urachus in hand – reared calves.

Treatment and prognosis: Therapy consists of either conservative management though monitoring or medical treatment for infection and cauterization of the urachus with iodine, phenol, or silver nitrate sticks applied into the urachus. Persistence of urine dribbling after 2 to 3 days of cauterization, the detection of involvement of other umbilical structures through ultrasound, and a rent in the urachus that produces subcutaneous swelling are indications for surgery. Not all foals that have persistent patent urachus have an infected umbilicus. Use of general anesthesia and removal of the entire urachus to the tip of the bladder are performed in foal or ruminants with an infected or enlarged urachus. Associated arteries and veins should be legated and removed if they are infected or necrotic. Merely legating the exterior stump can trap organisms and cause infection. In our neonatal unit the majority of patients with acquired patent urachus respond to conservative therapy. Late-onset patent urachus (>5 days of age) may be more refractory to conservative therapy. Complications of delaying surgery relate to development of bladder necrosis and uroperitoneum caused by extension of infection and inflammation of the urachus.

Prevention: Allowing the umbilical cord to rupture without legation or the careful use of specific umbilical clamps after birth has been suggested to decrease the incidence of patent urachus. Minimum handling of neonates and careful restraint may prevent pressure build-up in the bladder and subsequent patent urachus.