PriMera Scientific
Medicine and Public Health
Volume 8 Issue 1 January 2026
DOI: 10.56831/PSMPH-08-264
ISSN: 2833-5627

Successful Surgical Management of Type 1 Atresia Ani in a 3-Weeks-Old Piglet: A Case Report

Type: Case Report
Received: December 01, 2025
Published: January 07, 2026

Citation:
Aondowase Umayange., et al. "Successful Surgical Management of Type 1 Atresia Ani in a 3-Weeks-Old Piglet: A Case Report". PriMera Scientific Medicine and Public Health 8.1 (2026): 02-06.

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Abstract

Atresia ani is a congenital anomaly characterized by the absence or closure of the anal opening. This case report describes the successful surgical management of type 11 atresia ani in a 3-week-old piglet. The piglet was presented with a history of constipation and absence of anal opening. Surgical correction was performed using Epidural anaesthesia. The piglet recovered uneventfully and was able to pass stool normally post-operatively. This case report highlights the importance of early diagnosis and surgical intervention in the management of atresia ani in piglets.

Introduction

Atresia ani—synonymously imperforate anus—constitutes a congenital malformation typified by deficient anal canal morphogenesis; embryologically it ensues from aberrant anorectal septation or failure of the anal membrane to perforate, thereby impeding recto-anal segregation (Ryu et al., 2018). This anomaly, which affects the anus and rectum, is relatively common in young animals (Dreyfuss et al., 1989). The condition arises when the anorectal fold fails to fully separate the cloaca or when the fetal anal membrane fails to rupture, thereby preventing the normal separation of the rectum and anus during fetal development (Ryu et al., 2018). Atresia ani is classified into four types (I-IV) based on the anatomical location and extent of the rectal developmental anomaly (Ettinger and Feldman, 2005: Campos et al., 2009). Surgical intervention is the only viable treatment option for this condition. Various surgical techniques have been employed to correct atresia ani in domestic animals (Singh, 1989). Immediate surgical intervention, including anoplasty, which is surgical reconstruction of the anal orifice. The surgery is crucial in cases of atresia ani, as the condition can lead to feath of the animal if left untreated, due to disruptions in normal digestive activities (Loynachan et al., 2006). Remedial recourse is exclusively surgical; diverse reconstructive techniques—including emergent anoplasty—are mandated to avert lethal sequelae stemming from disrupted gastrointestinal homeo-

stasis (Loynachan et al., 2006; Singh, 1989).

The condition is relatively rare in pigs, but its occurrence can have significant economic implications for pig farmers. This case report describes the successful surgical management of type 2 atresia ani in a 3-weeks-old piglet.

Case history

A 3-weeks-old piglet was presented to the Veterinary Epidemiologic Clinic of Livestock Services Department, Ministry of Agriculture, Makurdi, Nigeria, with a history of straining to defecate and absence of anal opening. The piglet was born normally, but the owner noticed that it was not passing stool and the abdomen was distended. On physical examination, the piglet was found to be in good body condition, but it had a prominent abdominal distension. A rectal examination revealed the absence of an anal orifice.

Figure 1: Anoplasty of atresia ani piglet.

Figure 2: Mesoconium passed during anoplasty.

Figure 3: Post anoplasty.

Surgical Procedures

Surgical correction was performed under epidural anesthesia according to the method by Chauhan et al., (2011). The animal was positioned on the surgical table in lateral recumbency, with its hind limbs extended to either side, elevating the perineum (Figure 1). The perineal region, located below the base of the tail, was shaved and aseptically prepared by scrubbing with 5% Iodine Tincture (manufacturer by Leyjay Nigeria Limited . Caudal epidural anesthesia was induced using 2 mls of 2% lignocaine hydrochloride. A cruciate incision was made in the skin of the anal region (Figure 2), followed by careful blunt dissection to avoid damaging the perineal muscles. The blind end of the rectal cul-de-sac was identified, freed from surrounding attachments, and brought to the level of the anal sphincter (Figure 1). Stay sutures were used to anchor the rectal pouch to the external skin, securing it in place. The rectum was then opened using scissors, and the upper half of the cul-de-sac was sutured to the perineal walls to create a permanent anal orifice. The suturing technique ensured that the rectal mucosa was everted outward over the skin, using a simple interrupted pattern (Figure 1) with nylon suture size 3-0 (manufacturer by Lifecare Medical limited, Jianshu China). Post-operatively, the animal began passing meconium (Figure 1, 2, 3) To ensure a smooth recovery, the animal received Penicillin-Strrptomycin injections manufacturer by Jubaili Agrotec Nigeria Limited at the dose rate of 1mg/25kg for five consecutive days and Meloxicam injection at the dose rate of 0.3 mg/kg for three consecutive days via intramuscular administration.

Post-surgical treatment included Topical application of Chamil ointment for 6 days post-surgery. Penicillin-streptomycin P-STREP NOR by Jubaili animal health Ltd, Nigeria. (1ml/20kg body weight daily for 5 days), Multivitamin injection (VMultinor® by Jubaili Animal health Ltd, Nigeria) at the dose rate of 1ml/10kg of live body weight intra- muscularly for 5 days. The piglet exhibited swift recovery evidence by normal defecation. The wound showed swift healing, and the skin sutures were removed on the 12 th post-operative day.

Discussion

Atresia ani constitutes a congenital malformation ensuing from failed anorectal fusion in utero; it is stratified into four typologies: Type I - rectum essentially intact with a patent yet stenotic anus; Type II - rectum terminating blindly with an absent anus; Type III - proximal rectal blind pouch accompanied by anal agenesis; Type IV - proximal rectal blind pouch coexisting with a normally formed anus. Atresia ani et recti (anal atresia) is a congenital defect in which piglets are born without a functional anal opening; the rectum ends blindly a few millimetres inside the pelvis (Brown et al., 2007). The condition is rare (incidence < 0.5 % in mature herds, even

lower ≈ 0.17 % in some reports) but invariably lethal if untreated (Veena et al., 2016). Prompt diagnostic recognition and surgical remediation are imperative. Notably, atresia ani can often be associated with other congenital anomalies affecting the central nervous system, musculoskeletal system, and gastrointestinal system. In such complex cases, surgical correction alone may be insufficient to ensure the animal's survival (Sharun et al., 2019).

Atresia ani (synonymously. atresia ani et recti) may harbor a hereditary predisposition attributable to a single autosomal-recessive locus (Chaudhary et al., 2010); its pathogenesis implicates multifactorial elements, with rectal palpation before 40 days' gestation posited as a potential contributor (Durmus, 2009; Chauhan et al., 2011).

Prevalence in pigs. Anal atresia shows up in < 0.5 % of piglets on most farms, with some older herds reporting even lower rates (≈ 0.17 % in a few surveys). The defect is hereditary, and incidence can climb when particular boars or sows are repeatedly used (Wiedemann et al., 2005).

Prevalence in domestic species. Cattle are considered quite common relative to other species; herd-level reports range from 0.5 % to 2 % in some dairy populations. Dogs are rare, estimated at roughly 0.0007 % (female > male); certain breeds (e.g., Finnish Spitz, Boston Terriers, Maltese) appear over-represented (Carvalho et al., 2012) Cats are even rarer than dogs; a recent clinic-based survey found a 4.7 % occurrence among cats presented for congenital defects, markedly higher than the dog figure, likely reflecting referral bias. Other livestock show sporadic cases in goats, sheep, llamas, alpacas, and camelids (Dantas et al., 2010) but systematic prevalence data are scarce; most reports treat them as uncommon repeatedly used (Wiedemann et al., 2005).

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Conclusion

This case report underscores the imperative of prompt diagnosis and surgical intervention in the management of atresia ani in piglets. The surgical techniques brought swift recovery and proved efficacious in rectifying type 11 atresia ani in a 3-weeks-old piglet. Consequent to meticulous post-operative stewardship, the piglet was able to recover uneventfully and pass stool normally.

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