

CONGENITAL HYPOSPADIAS WITH INTERNAL SUBURETHRAL DIVERTICULUM IN A DUROC CROSS PIGLET AND ITS SURGICAL MANAGEMENT: A CASE REPORT

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ABSTRACT

A 10-days-old intact male Duroc cross piglet weighing 3.7 kg was presented with a history of inability to urinate normally since birth, with urine accumulating in a pouch like structure. Clinical examination revealed a markedly narrowed preputial opening (hypospadias) preventing protrusion of the penis, along with the underlying internal suburethral diverticulum. Under local infiltration anaesthesia with 2 % lignocaine, an initial attempt was made to relieve the obstruction by enlarging the preputial opening with an incision, but this failed to relieve the trapped urine. An incision was therefore made directly over the distended diverticulum to evacuate the accumulated urine and its mucosa was sutured to the adjoining skin using sterile cotton thread to maintain a permanent, patent drainage opening. The piglet recovered uneventfully following prophylactic tetanus toxoid, antibiotic and analgesic administration. The owner was advised against using the animal for future breeding, given the congenital nature of the defect.

Key words: Hypospadias, internal suburethral diverticulum, congenital anomaly, Duroc cross piglet

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INTRODUCTION

Congenital anomalies of the genitalia are recognised, sporadic findings across cattle, sheep, goats, dogs, horses, and pigs, arising from partial or complete failure of fusion of the urethral folds during fetal development (Iannuzzi *et al.*,

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2020). Hypospadias, characterized by an abnormally narrow or malpositioned preputial/urethral opening, can obstruct normal urine outflow and lead to secondary complications such as urine pooling, preputial diverticulum formation, ascending infection and in severe cases, bladder distension or rupture if left unaddressed. In pigs specifically, genomic regions linked to congenital malformations in newborn piglets have recently been investigated using machine-learning approaches, reflecting growing interest in the underlying genetic basis of such porcine birth defects (Bakoev *et al.*, 2021). Comparable urethral diverticula associated with hypospadias have also been documented in other species, such as a fluid-filled prescrotal pouch with urine leakage in a hypospadiac goat kid (Almubarak *et al.*, 2016), underscoring that this combination of defects, though rare, is not unique to swine. Early recognition and timely surgical intervention are essential to relieve obstruction, prevent systemic complications and ensure the animal's welfare. This report describes the clinical presentation, diagnosis and surgical management of a case of congenital hypospadias with associated internal suburethral diverticulum in a neonatal piglet.

CASE HISTORY

A 10-day-old intact male Duroc cross piglet weighing 3.7 kg was brought with a history of straining to urinate and progressive swelling in the ventral preputial region since birth (Fig.1). The owner reported that urine was not being passed normally through the normal course but was

instead accumulating internally, distending a diverticulum beneath the urethra.

CLINICAL EXAMINATION

On clinical examination, the piglet had a rectal temperature of 39.1°C, heart rate of 150 beats/min and respiratory rate of 32 breaths/min. Haematological examination revealed haemoglobin of 9.5 g/dL, PCV of 29%, RBC count of $4.8 \times 10^6/\mu\text{L}$ and total leukocyte count of $13.2 \times 10^3/\mu\text{L}$, with a differential leukocyte count of 42% neutrophils, 52% lymphocytes, 4% monocytes and 2% eosinophils. Serum biochemical parameters were within normal limits, with total protein 5.0 g/dL, albumin 2.5 g/dL, glucose 105 mg/dL, urea 12 mg/dL, creatinine 0.65 mg/dL, AST 60 U/L, ALT 30 U/L, ALP 1000 U/L, calcium 10.2 mg/dL and phosphorus 6.8 mg/dL. On physical examination, the piglet was found to have a grossly narrow preputial opening, insufficient to permit protrusion of the penis. A fluctuant, fluid-distended swelling was palpable in the region, consistent with urine accumulation within an internal suburethral diverticulum communicating with the urethra (Fig.2). The animal was otherwise alert and active, with no signs of systemic illness at the time of presentation . Radiograph was taken to assess the contour of bladder (Fig.3).

TREATMENT AND SURGICAL MANAGEMENT

An initial attempt at conservative surgical relief was made under local infiltration with 2% lignocaine: the

constricted preputial opening was incised in an effort to enlarge it and allow the trapped urine to drain. This attempt did not relieve the obstruction, as the underlying suburethral diverticulum remained distended with urine (Fig.4). Definitive surgical intervention was therefore undertaken. Local infiltration using 2% lignocaine was given around the surgical site. An incision was made directly over the distended suburethral diverticulum, allowing immediate evacuation of the retained urine (Fig.5). To prevent recurrence of urine accumulation and to establish a permanent functional drainage pathway, the cut edges of the diverticular mucosa were sutured to the adjacent skin margins using sterile cotton thread with interrupted suture pattern, creating a patent stoma-like opening that would remain open for continued urine outflow (Fig.6). Post-operatively, the piglet was administered 0.5 ml tetanus toxoid as a prophylactic measure, along with a course of inj. Ceftriaxone @ 15mg/kg BW IV and inj. Tramadol @ 0.2 mg/kg IV were advised to control infection and pain. The owner was clearly advised that, presence of the congenital nature of the hypospadias and associated urethral anomaly, the animal should not be retained for breeding purposes. Sutures were removed on 10th Postoperative day.

DISCUSSION

Hypospadias in piglets, though sporadic, represents a developmental defect arising from incomplete closure of the urethral groove or abnormal preputial development during fetal life; the underlying

genetic and developmental mechanisms remain incompletely understood even across species and are the subject of ongoing comparative research (Chang *et al.*, 2020). When the preputial opening is severely narrowed, normal urination is impeded, predisposing to urine pooling within an internal suburethral diverticulum, local dermatitis, ascending urinary tract infection, and, if untreated, potential bladder distension. In this case, simple enlargement of the preputial opening with a Bard-Parker blade under local anaesthesia was insufficient to relieve the obstruction, since the primary site of urine retention was the suburethral diverticulum itself rather than the preputial stricture alone, necessitating direct surgical marsupialization of the diverticulum to establish a permanent drainage outlet. This approach parallels reports in other species, where surgical repair of a urethral diverticulum has been the mainstay of treatment when conservative or minimally invasive measures fail (Almubarak *et al.*, 2016). Congenital urogenital defects of this nature are generally regarded as sporadic, and in other species are considered to follow a heterogeneous, at least partly hereditary, mode of inheritance (Iannuzzi *et al.*, 2020); genomic studies in swine have similarly begun to identify chromosomal regions associated with newborn malformations (Bakoev *et al.*, 2021). On this basis, culling the affected animal from the breeding pool is a prudent management recommendation to prevent propagation of the defect in future generations.

CONCLUSION

This case highlights the importance of early clinical recognition and timely surgical correction of congenital hypospadias with an internal suburethral diverticulum in neonatal piglets. Surgical marsupialization of the urine-filled diverticulum, combined with supportive antibiotic, analgesic and prophylactic tetanus toxoid therapy, resulted in successful relief of the urinary obstruction. Advising against the future breeding use of affected animals remains an important component of overall herd health

management in such congenital cases.

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Fig.1. The presented animal



Fig.2. Hypospadias along with internal suburethral diverticulum



Fig.3 Radiograph depicting intact bladder



Fig.4 Extension of preputial opening



Fig.5. Relieving of urine through the opening made over the pouch



Fig.6. Patent opening

REFERENCES

- Almubarak, A.M., Abdelghafar, R.M., Gameel, A.A. and Osman, N.M. (2016). Penile urethral hypospadias with two fistulae and diverticulum in a Saanen kid. *Case Reports in Veterinary Medicine*, Article ID 6534062.
- Bakoev, S., Traspov, A., Getmantseva, L., Belous, A., Karpushkina, T., Kostyunina, O., Usatov, A. and Tatarinova, T.V. (2021) Detection of genomic regions associated with malformations in newborn piglets: a machine-learning approach. *Peer Journal*, **9**, e11580.
- Chang, J., Wang, S. and Zheng, Z. (2020) Etiology of hypospadias: a comparative review of genetic factors and developmental processes between human and animal models. *Research and Reports in Urology*, **12**: 673–686.
- Iannuzzi, A., Braun, M., Genuardo, V., Perucatti, A., Reinartz, S., Proios, I., Heppelmann, M., Rehage, J., Hülskötter, K., Beineke, A., Metzger, J. and Distl, O. (2020) Clinical, cytogenetic and molecular genetic characterization of a tandem fusion translocation in a male Holstein cattle with congenital hypospadias and a ventricular septal defect. *PLoS ONE*, **15**(1), e0227117.