

LATERAL EAR CANAL RESECTION FOR THE TREATMENT OF CHRONIC OTORRHOEA IN BUFFALOES

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ABSTRACT

The study was aimed to surgically treat the buffaloes suffering from chronic otorrhoea. It was a prospective clinical study with a compilation of case reports. The study investigated 8 adult buffaloes suffering from chronic otorrhoea associated with accumulation of calcified pus in the horizontal ear canal. These 8 buffaloes were refractory to ear canal flushing and medicinal treatment. Resection of the lateral ear canal was carried out under sedation using inj. xylazine 0.025 mg/Kg or inj. midazolam 0.2 mg/Kg, intravenously and local infiltration anaesthesia (2% lignocaine hydrochloride).

Majority of buffaloes recovered uneventfully within 2 weeks; one buffalo took 5 to 6 weeks for complete recovery. The surgical technique was found to be a simple, clinically relevant, and feasible under field settings. This communication recommends surgical resection of the lateral ear canal for the treatment of chronic otorrhoea in buffaloes to remove the calcified pus accumulated in the horizontal canal and to facilitate drainage in clinical cases of otorrhoea refractory to ear canal flushing and / or conservative medicinal treatment.

Keywords: *Bubalus bubalis*, buffaloes, otorrhoea,

surgery, vertical ear canal, Zepp's operation

INTRODUCTION

As compared to dogs, otitis externa or media is rarely encountered in adult bovines. Surgical resection of lateral ear canal is recommended for the management of chronic otitis externa in dogs (Bruhn and Grier, 1980). It facilitates drainage of exudates or secretions accumulated at the base of the vertical ear canal as the opening of the external ear canal is directed upwards (Bruhn and Grier, 1980). This technique is also known as Zepp's operation. Concerns regarding the lack of literature on the satisfactory treatment and prevention of otitis in bovine have been highlighted which cause heavy economic losses mainly because of extensive and inefficient treatment, high morbidity, mortality and condemnation of heads and carcasses (Duarte and Hamdan, 2004).

In comparison to dog, the external ear canal of buffaloes is directed ventro-laterally. So the pus should ideally drain out, spontaneously with gravity and the buffalo suffering from otitis externa should respond to medicinal treatment. However, the medicinal treatment has been reported to be futile in many cases of chronic otorrhoea in buffaloes (Mouli, 1990) and cattle

(Duarte and Hamdan, 2004; Dilip Kumar *et al.*, 2017) consequently, requiring surgical intervention to facilitate drainage (Mouli, 1990; Dilip Kumar *et al.*, 2017). This clinical study describes the detailed surgical procedure of lateral ear canal resection in buffaloes suffering from chronic otitis externa due to calcified pus in the horizontal ear canal.

CASE PRESENTATION AND OBSERVATIONS

Eight clinical cases of adult buffaloes, presented to the University Veterinary Hospital for the treatment of unilateral chronic otitis externa, were included. All the buffaloes were client owned and high standard veterinary care was involved in the treatment. On presentation, all the buffaloes had a chronic history of thick greenish/whitish pus discharge from the right ($n=5$) or left ($n=3$) ear with a mean \pm SE duration of 3.27 ± 1.38 months (Range 1 to 6 months). The buffaloes had a mean age and body weight of 6.75 ± 1.04 years (range 5 to 8 years) and 508.25 ± 71.03 kg (range 421 to 610 kg), respectively.

Clinical examination revealed soiling of ear pinna with greenish-whitish pus, which spread with ear movements (Figure 1). The base of the affected ear was hard and swollen as compared to the healthy side. All the buffaloes were non-responsive to medicinal treatment consisting of ear canal flushing, topical and systemic antibiotic therapy in field for long periods. Examination of the ear canal with gloved finger felt a hard and sharp bone/wood like structure blocking the junction of horizontal and vertical ear canal. All the buffaloes were refractory to the clinical examination due to pain and it was not possible to pull out palpable hard structure in the conscious standing buffalo.

Head tilt was not present in any of the buffaloes. Otoscopic examination of the canal was tried, but the obstruction did not make it successful. Based on the clinical observations, chronicity of the disease condition and non-responsiveness to medicinal treatment, it was recommended for lateral ear canal resection. The surgical procedure was performed on the sick buffaloes after the client consent only.

SURGICAL TECHNIQUE AND DISCUSSION

The surgery was performed on buffaloes casted in lateral recumbency with the affected ear upwards. The anaesthetic protocol consisted of a combination of sedation using inj. xylazine 0.025 mg/kg ($n=6$) or inj. midazolam 0.2 mg/kg ($n=2$), intravenously and local infiltration anaesthesia (2% lignocaine hydrochloride) at the site of incision. Sedation with inj. midazolam was preferred in pregnant buffaloes to prevent foetal loss (2 buffaloes). The area around external ear canal was shaved and aseptically prepared for surgery using chlorhexidine scrub.

The direction of vertical ear canal was ascertained by gently placing a straight artery forceps into the ear canal. Two linear horizontal skin incisions were made on the vertical ear canal on the either side of the tragus and intersecting slightly beyond the level of the horizontal ear canal opening (Figure 2). The flap of skin in between the incisions was excised. With the scissors, the auricular cartilage of the vertical ear canal was resected along the dorsal and ventral border to the level of the horizontal canal opening. This cartilage piece was also excised from the base. The removal of the cartilage widened the vertical ear canal for

examination.

The sharp hard structure felt blocking the opening of the horizontal ear canal on clinical examination was found to be calcified pus and was removed by pulling hard with an artery forceps (Figure 3). On further digital examination inside the opening of the horizontal ear canal, the caudal-dorsal area of the horizontal ear canal was found filled with hard irregular spiky material. This was similar in texture to the pus blocking the ear canal opening and was in continuation to it. A small piece of inside material was pulled out with an artery forceps for confirmation of the calcified pus material. Later, multiple large pieces of calcified pus were removed from the horizontal ear canal with the help of artery forceps (Figure 3). The whole ear canal passage of about 7.5 cm in diameter was cleared in the similar fashion. The cavity was deep, and a finger could not reach the farthest end of it. So, alternatively finger and artery forceps were used to palpate the site of calcified pus and to pull it out. Once cleared with all the material, the ear canal cavity was flushed with copious amount of normal saline solution which was simultaneously sucked outside with a suction using wide bore pipe with sterile extension (Figure 4). The cavity was cleared of all the debris inside and was stuffed with sterile gauze to control diffuse bleeding. The skin edges of the respective sides of the vertical canal were sutured with apposition suture pattern using braided silk thread No. 2 (Figure 5). The auricular cartilage was not included in the sutures. After skin sutures, the new acoustic meatus of the horizontal canal was clearly visible.

Postoperative care included antibiotics; inj. ampicillin + cloxacillin 10 mg/kg and inj. gentamicin sulphate 2 mg/kg, twice daily, intramuscularly [IM], for 5 and 3 days, respectively. Inj. meloxicam 0.2 mg/kg was given, once daily for 3 days, IM.

Antiseptic dressing was advised by daily flushing the horizontal ear canal with diluted povidone iodine solution (1% in normal saline) for 5 to 10 days. During flushing, the head was advised to be kept down. The skin sutures were advised to be removed after 15 days.

Telephonic follow up revealed complete recovery in the 7 buffaloes within 2 weeks. No reoccurrence with pus discharge was reported in any of the operated buffalo up to one year. One buffalo had mild discharge from the affected ear for a follow up period of one month, which was treated with repeat course of antibiotic therapy for 5 days and daily flushing of the ear canal.

In the current study, all the buffaloes were adult and had unilateral otitis. Earlier study on buffaloes reported the occurrence of unilateral otitis to be double the frequency than the bilateral with an overall incidence of 4.51% and majority involving adult buffaloes (Rani, 2010). There are a few reports on adult bovine suffering with otitis externa (Dilip Kumar *et al.*, 2017), otitis media (Yeruham *et al.*, 1999; Francoz *et al.*, 2004) and interna (Walz *et al.*, 1997). Multifocal overlapping etiology with parasitic, bacterial, yeast etc. were reported in literature (Rani, 2010; Ladds *et al.*, 1972; Baba *et al.*, 1988; Vestweber, 1999; Maeda *et al.*, 2003) and have been reported to be treated satisfactorily using medicinal treatment (Rani, 2010). Although, medicinal treatment was futile in the present study and this was also highlighted in a few other studies in cattle and buffaloes as well (Duarte and Hamdan, 2004; Dilip Kumar *et al.*, 2017).

The authors could find the surgical treatment of otitis externa in a Zebu bullock (Dilip Kumar *et al.*, 2017) and in a report on 5 buffaloes (Mouli, 1990) in which lateral ear canal resection was done with drain board technique and was found successful. The drain board was not made



Figure 1. Photograph showing soiling of ear pinna with greenish-whitish pus in a buffalo.



Figure 2. Photograph showing two linear horizontal skin incisions made on the lateral wall of vertical ear canal on the either side of the tragus and intersecting slightly beyond the level of the horizontal ear canal opening.

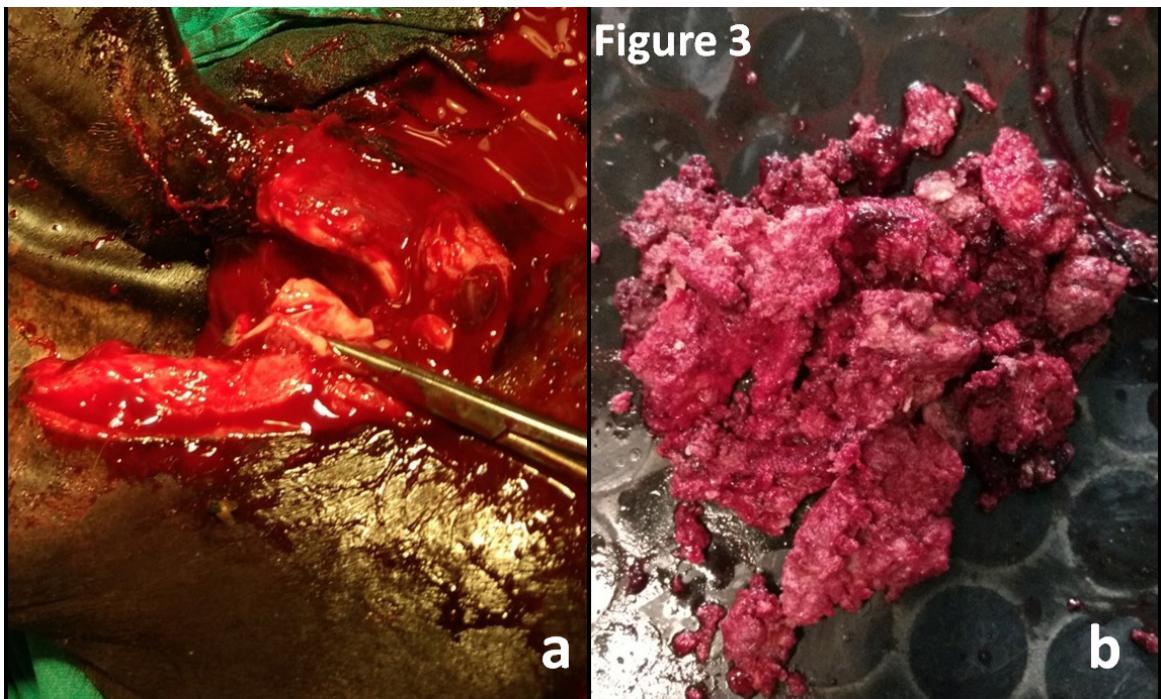


Figure 3. Photograph showing calcified pus blocking the canal and being removed with an artery forceps (a).
Photograph showing the calcified pus removed from the horizontal ear canal (b).

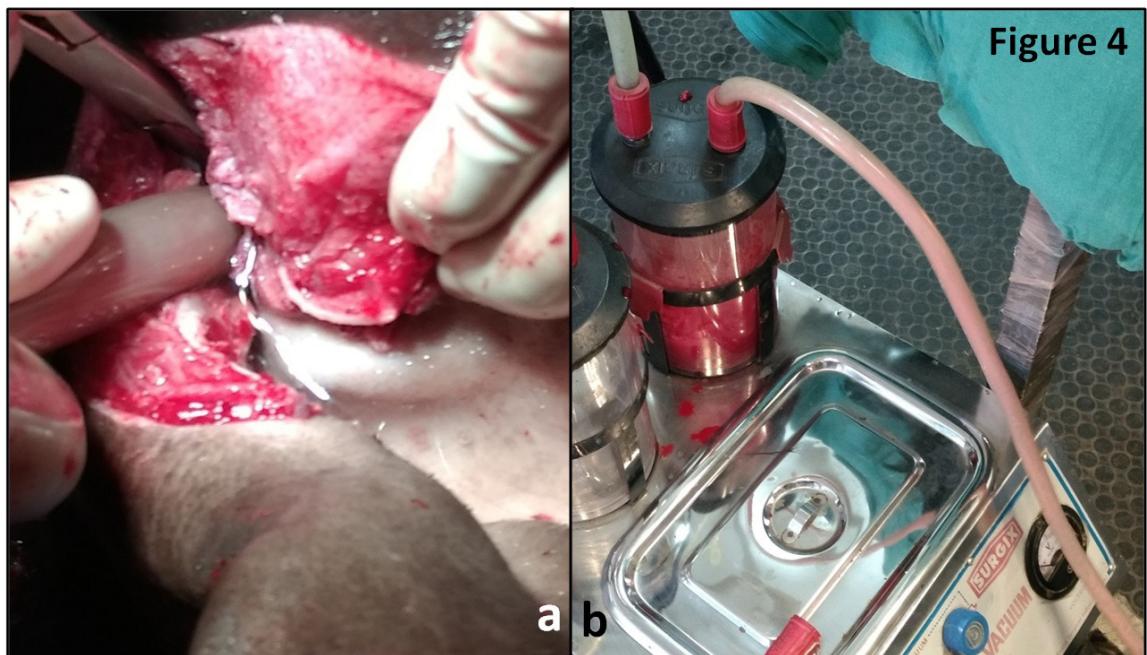


Figure 4. Photograph showing the cavity being flushed with normal saline solution and simultaneously sucked outside with a suction using wide bore pipe with sterile extension.

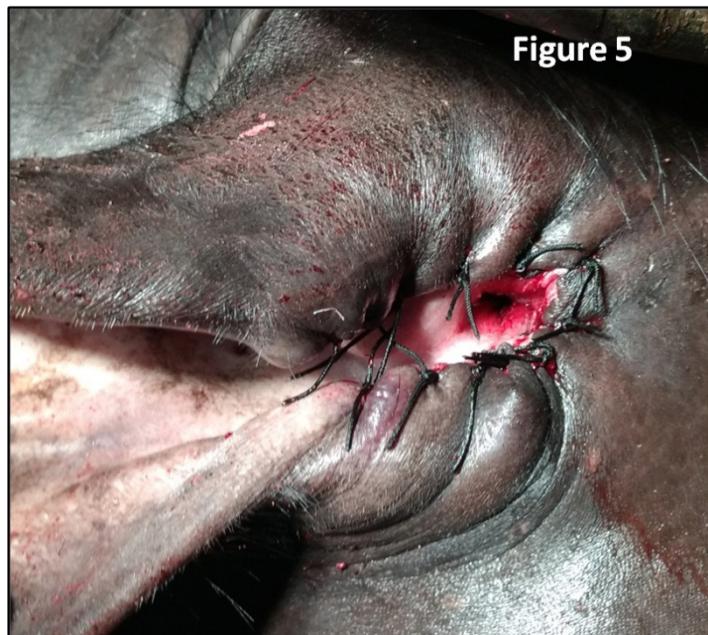


Figure 5

Figure 5. Photograph showing the skin edges of the respective sides of the vertical canal been sutured with apposition suture pattern using braided silk.

in the current study as the ear in bovine is already hanging downwards and provides natural drain board with gravity. However, the reason for not draining of the pus, naturally, in the present study, was the calcified pus blocking the ear canal opening and consequently accumulating in the horizontal ear canal. Only, mild liquefied pus was seen coming out from the stenotic ear canal. The technique employed in this study, widened the vertical canal by lateral ear canal resection so that the horizontal canal opening could be visualized after surgery which could be easily cleaned or flushed. The technique also cleaned the accumulated calcified pus from the horizontal ear canal which otherwise was impossible without surgical intervention. Mouli (1990) reported inclusion of ear canal cartilage in the suturing as the epithelial lining of the ear canal was not strong to hold the sutures, but no such problem was observed in this study and the cartilage was not included in the sutures. Local anaesthesia with sedation was found to be adequate for the lateral ear canal resection surgery in the present study.

In conclusion, lateral ear canal resection for the treatment of chronic otitis in buffaloes is successful. It leads to widening of the ear canal and cleans the accumulated calcified pus from the horizontal ear canal.

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