

## **OESOPHAGOTOMY FOR MANAGEMENT OF CONCRETED POLYTHENE FOREIGN BODY OBSTRUCTION IN BUFFALO- A REPORT OF TWO CASES**

**\*Sukhnandan Singh<sup>1</sup>, H.R. Bhardwaj<sup>2</sup>, Priyanka Pandey<sup>3</sup>, Amandeep Kour<sup>1</sup>,  
Ankur Sharma<sup>4</sup> and Manzoor Ahmad Bhat<sup>1</sup>**

<sup>1</sup>M.V.Sc. Scholar, <sup>2</sup>Professor and Head, <sup>3</sup>Ph.D. Scholar, <sup>4</sup>Assistant Professor  
Division of Veterinary Surgery and Radiology

Faculty of Veterinary Sciences and Animal Husbandry

Sher-e-Kashmir University of Agricultural Sciences and Technology-Jammu (SKUAST-J),  
R.S. Pura-181102, India

E-mail: nandanjhand7@gmail.com (\*Corresponding author)

**Abstract:** Two buffaloes suffering from oesophageal obstruction with concreted polythene foreign bodies were presented with the history of anorexia, ptyalism, intermittent regurgitation, inability to swallow, arching of the neck, protrusion of the tongue and restlessness. In both cases, the rectal temperature, heart rate and respiration rate were 102°F and 101°F, 62 and 82 beats per min. and 24 and 40 breaths per min, respectively which were within the reference range. Confirmatory diagnosis was made by survey radiograph of cervical region which revealed radiopaque foreign bodies in both cases. Conservative treatment to push the foreign bodies into the rumen failed; hence both cases were subjected to oesophagotomy. One case recovered eventually, however, in second one oesophageal fistula was recorded after seventh day which was managed by daily antiseptic dressing.

**Keywords:** Buffaloes, tympany, radiography, oesophagotomy, oesophageal fistula.

### **Introduction**

Oesophageal obstruction due to foreign body is usually reported in bovines, due to their greedy and indiscriminate feeding habits. It may be primary intraluminal obstruction or arise secondary to an extraluminal compression by a mass (Haven, 1990 and Smith, 2008). Intraluminal obstruction or “choke” is the most common disorder that usually occurs when foreign bodies such as large feedstuff, medicated boli, mango, tarpaulin cloth, palm kernel, leather piece, rexin, fresh potato, trichophytobezoar or oesophageal granulomas get lodged in the lumen of the oesophagus (Meager and Mayhew, 1978; Patel and Brace, 1995; Sreenu and Suresh kumar, 2001; Shivprakash, 2003; Yadav *et al.*, 2008; Smith, 2008; Hari Krishna *et al.*, 2011; Vishwanatha *et al.*, 2012; Gangwar *et al.*, 2013; Bhattacharya *et al.*, 2019 and Hari Krishna *et al.*, 2020 ). Further, intraluminal oesophageal obstruction may be complete or partial depending upon the type of foreign body. Complete oesophageal obstruction is an

emergency condition because it interferes with the eructation of gases resulting in acute tympany, respiratory distress and requires immediate intervention (Smith, 2008; Marzok *et al.*, 2015; Pund *et al.*, 2018 and Hari Krishna *et al.*, 2020). These obstructions occur at the pharynx, the cranial aspect of the cervical oesophagus, the thoracic inlet or at base of the heart (Misk *et al.*, 2004; Smith, 2008 and Choudhary *et al.*, 2010). Intraluminal obstruction at the cervical region has been reported to occur in buffalo with feed particles (Hari Krishna *et al.*, 2011), plastic material or leather (Semieka, 2015; Marzok *et al.*, 2015 and Borakhatariya and Gadara, 2017), corn cups (Semieka, 2015 and Marzok *et al.*, 2015), turnip, onion, rolls of ropes metal magnet, sugar beet, (Marzok *et al.*, 2015), root of cabbage, pieces of rubber (Semieka, 2015), unripped guava (Pund *et al.*, 2018) and electric wire with rubber covering (Kumar *et al.*, 2016). In rare cases extraluminal incomplete obstruction occurs when pressure is exerted on the oesophagus by the neighboring, tissues or space-occupying lesions such as large periesophageal abscesses, enlarged mediastinal lymph nodes, thymic form of Lymphosarcoma, aortic tumors or mediastinal lymphadenopathy (Radostits *et al.*, 2000 and Marzok *et al.*, 2015).

Diagnosis depends on the history of eating particular food stuff and clinical signs such as ruminal tympany, respiratory distress, nasal discharge of food and water, tenesmus, retching, ptyalism and metabolic acidosis (Smith, 2008; Vishwanatha *et al.*, 2012; Semieka, 2015; Borakhatariya and Gadara, 2017; Pund *et al.*, 2018; Bhattacharya *et al.*, 2019; Hari Krishna *et al.*, 2020). External palpation is used to confirm obstruction at cervical oesophagus (Mahesh *et al.*, 2010). Manual examination of oral cavity, probangs or stomach tubes, oesophageal endoscopy (Sivaraman *et al.*, 2017), oesophageal ultrasonography, and radiography of the cervical and thoracic esophagus are additional diagnostic tools to determine the site of obstruction. Survey or contrast radiography is a confirmative diagnostic tool that may elucidate the etiology of the oesophageal obstruction (Radostits *et al.*, 2000).

Various treatments such as percutaneous external oesophageal massage (Borakhatariya and Gadara, 2017), passage of a stomach tube, Thygesen's probang (Churh *et al.*, 1972) or an inflation of endotracheal tube followed by endoscopic retrieval of the foreign bodies (Mahesh *et al.*, 2010; Sivaraman *et al.*, 2017). Surgical treatment is indicated when conservative therapy fails, however many surgeons were going directly to surgical treatment as a sole solution (Misk *et al.*, 2004). Suturing of oesophagus can be done by using a non-absorbable (e.g., polypropylene or nylon) or long lasting absorbable (e.g., polyglactin 910, polydioxanone or polyglyconate) suture material is used (Fubini and Ducharme, 2004).

Oesophageal obstruction should be considered as an emergency because of elevated pressure on the oesophageal mucus membrane by the obstructing foreign bodies, which results in extensive tissue damage with formation of scar tissue, stenosis and even oesophageal fistula (Ruben, 1997 and Feige *et al.*, 2000). The key factors for successful surgical interventions are postoperative follow-up (Meagher and Mayhew, 1978).

### **History and clinical signs**

A 5 years Murrah buffalo (case 1) and 7 years old Nili-Ravi buffalo (case 2), were presented with the history of anorexia, ptyalism, intermittent regurgitation, inability to swallow, tympany (absent in case 1 due to incomplete obstruction and case was presented more than 36 hours after obstruction), respiratory distress in case 2 due to tympany, arching of the neck, protrusion of the tongue and restlessness. In both cases, the rectal temperature, heart rate and respiration rate were 102°F and 101°F, 62 and 82 beats per min and 24 and 40 breaths per min, respectively.

### **Diagnosis**

Tentative diagnosis was made on the basis of history, clinical signs. In both cases, confirmatory diagnosis was made by survey radiographs of cervical region which revealed presence of radiopaque foreign body in each (Fig 1, A & B). Since conservative attempts to push the foreign body in rumen failed, so it was decided to subject the animals for oesophagotomy.

### **Treatment and Discussion**

Before undertaking surgical treatment, tympany was relieved by applying trocar and cannula on left paralumbar fossa in (case 2). In each case, foreign body was not palpable, so the location of foreign body/surgical site was confirmed by insertion of probang. Both the buffaloes were restrained in right lateral recumbency and surgical site was prepared aseptically under sedation with injection Xylazine hydrochloride<sup>1</sup>. Injection Lignocaine hydrochloride<sup>2</sup> was infiltrated on the surgical site to achieve local analgesia. A longitudinal incision of about 10 cm was made along the dorsal border of the jugular furrow, the sternocephalicus muscle was separated and thus exposing the obstructive site. Utmost care was taken to avoid injury to jugular vein and carotid artery. Oesophagus was exposed and a longitudinal incision was made directly over the obstructed area. In both cases, the foreign bodies were made of concreted plastic material (Fig 2, A & B). The mucosa was sutured by

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<sup>1</sup> Inj Xylaxin, Indian Immunologicals, Ltd., A.P.

<sup>2</sup> Inj Lox 2%, Neon Laboratories, Ltd., Mumbai.

the simple interrupted suture and sub-mucosa by the simple continuous mattress using polyglycolic acid No. 2-0. The surgical site was flushed with sterile normal saline and the muscle layer was closed with a simple continuous pattern, Sub cutis was closed by subcuticular suture using polyglycolic acid No. 1. The skin incision was closed with horizontal mattress suture pattern using nylon suture No.2.

Post-operatively, the buffaloes were maintained on soft gruel diet for two days followed by chaffed soft grass, Injection Enrofloxacin hydrochloride<sup>3</sup> @ 2.5 mg per kg body wt. and injection Meloxicam<sup>4</sup> 0.5 mg per kg body wt. were administered for 5 and 3 days, respectively. Injection 5% Dextrose Normal Saline and Ringer Lactate were given for three consecutive days postoperatively. Antiseptic dressing of the wound was done with 5% povidone iodine lotion daily.

In case 1, at surgical site oesophageal fistula was recorded on day 7 postoperatively leading to oozing of feed material, however, this post-operative complication was managed by daily lavaging of site with tap water followed by antiseptic dressing with 5% povidine iodine which healed by secondary intension (Fig-3A & B). In case 2, no post-operative complication was recorded. The skin sutures were removed on the 12<sup>th</sup> post-operative day.

In our case two buffaloes were found with cervical oesophageal obstruction due to concreted polythene which might be due to greedy and indiscriminate feeding habits of ruminants. Similar findings were reported by (Smith, 2008; Semieka, 2015; Marzok *et al.*, 2015; Sivaraman *et al.*, 2017). In case 1 obstruction was incomplete, in case 2 it was complete leading to tympany due to failure of passage of gases of rumino-reticulum through oesophagus. Similar findings had also been reported by other authors (Smith, 2008; Vishwanatha *et al.*, 2012; Semieka, 2015; Marzok *et al.*, 2015; Borakhatariya and Gadara, 2017; Pund *et al.*, 2018; Bhattacharya *et al.*, 2019 and Hari Krishna *et al.*, 2020). In both cases, obstruction was found in cervical region of oesophagus this may be attributed to thicker oesophageal wall and trumpet or rosette shaped lumen moreover, pressure exerted by the first rib and trachea could act as predisposing factor. Previous workers has also reported the similar findings (Holfmeyr, 1974; Smith, 2008; Mahesh *et al.*, 2010; Vishwanatha *et al.*, 2012; Semieka, 2015; Marzok *et al.*, 2015; Kumar *et al.*, 2016; Borakhatariya *et al.*, 2017; Pund *et al.*, 2018; Bhattacharya *et al.*, 2019 and Hari Krishna *et al.*, 2020). In both cases, concreted plastic foreign body were retrieved which might have come from rumen during the

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<sup>3</sup> Inj Floxidin, Samrudh Pharmaceuticals Tarapur, Thane.

<sup>4</sup> Inj Zobid M, Intas Pharmaceuticals Ltd, Ahmedabad.

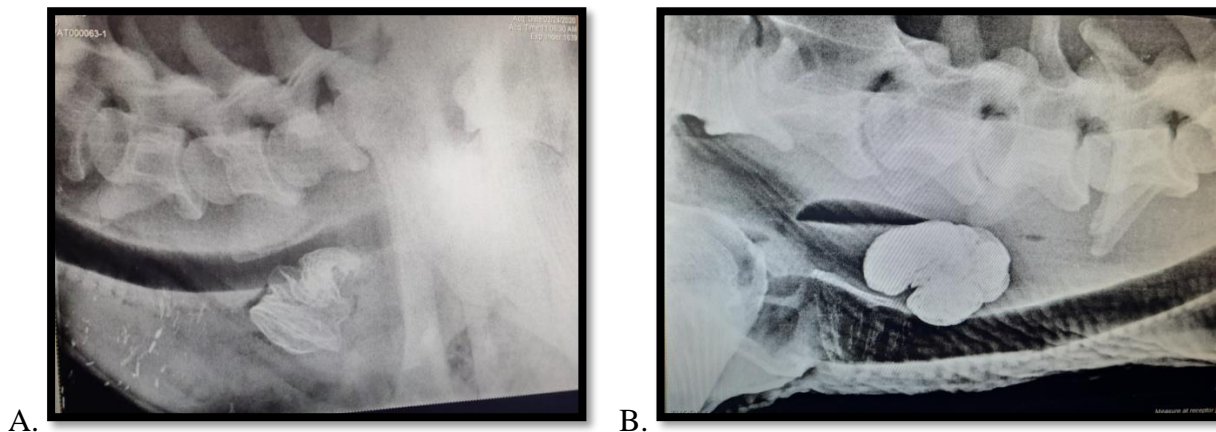
process of rumination towards the mouth and have been caught half way. Similar observation has also reported by other workers (Singh *et al.*, 1993; Semieka, 2015; Marzok *et al.*, 2015 and Borakhatariya *et al.*, 2017). In both the cases, oesophageal obstruction was confirmatory diagnosed by doing survey radiographs which revealed radiopaque concreted plastic foreign bodies. Similar findings were reported by Semieka, 2015; Marzok *et al.*, 2015; Kumar *et al.*, 2016 and Borakhatariya *et al.*, 2017. However, in other studies ultrasonography (Kumar *et al.*, 2016) and flexible endoscopy (Sivaraman *et al.*, 2017) have been successfully used in diagnosing the oesophageal obstruction in bovines. In present study, polyglycolic acid was used as suturing material. However, some author has used chromic catgut (Vishwanatha *et al.*, 2012; Semieka, 2015; Kumar *et al.*, 2016; Pund *et al.*, 2018; Bhattacharya *et al.*, 2019 and Hari Krishna *et al.*, 2020) while other used polyglactin 910 (Marzok *et al.*, 2015 and Borakhatariya *et al.*, 2017) for suturing of various layers of oesophagus. Post-operatively at day 7 in case 1, a oesophageal fistula developed as there was oozing of feed material mixed with saliva from the site of operation which might be due to chronic lodgment of concreted plastic foreign body at obstruction site which might had resulted in pressure necrosis of the mucosa of oesophagus. Moreover the case 1 was presented for treatment after 36 hours of obstruction. However, daily antiseptic dressing was done and fistula healed by secondary intension mechanism of wound healing. Similar findings were reported by (Ruben, 1997; Feige *et al.*, 2000 and Marzok *et al.*, 2015) however, in case 2 no post-operative complication was recorded similar finding was reported by (Vishwanatha *et al.*, 2012; Semieka, 2015; Kumar *et al.*, 2016; Pund *et al.*, 2018; Bhattacharya *et al.*, 2019 and Hari Krishna *et al.*, 2020). The prognosis of bovines suffering from oesophageal obstruction is good if they are treated within 24 to 36 hour from the onset of clinical signs (Ravikumar *et al.*, 2003).

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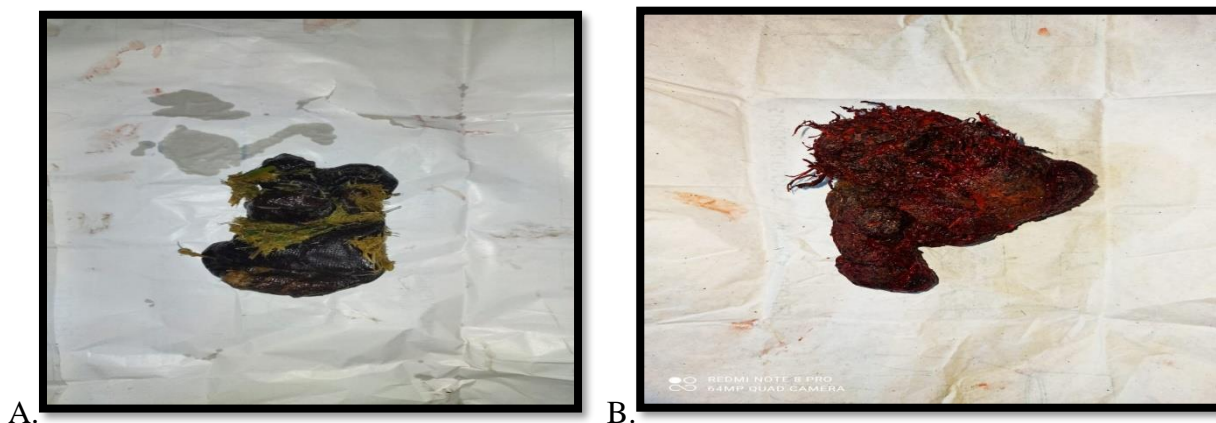
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**Fig 1-**

A- lateral radiograph of cervical region in case 1 reveals foreign body having in the oesophagus.

B- lateral radiograph of cervical region in case 2 reveals foreign body in the oesophagus.(density of foreign body was approximatly equal to density of bone).



**Fig 2-**

A- Foreign body removed from case 1.

B- Foreign body removed from case 2 (Both foreign bodies were composed of plastic).





A.



B.

**Fig-3-**

A. Oesophageal fistula, oozing of feed material from wound.

B. Complete Healing of oesophageal fistula.