

Evaluation of Theloressectoscopy for Management of Teat Obstruction in Dairy Cows

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Abstract: A total of 175 Jersey cross bred cows (180 teats) at a different stage of lactation were presented at the Department of Veterinary Surgery and Radiology, Teaching veterinary clinical complex, with the history of difficulty in letting down of milk was taken for the present study. All the affected animals were subjected to ultrasound scanning using 7.5 MHz linear probes by water bath method with and without normal saline infused into the teat as contrast. After the assessment of type and site of obstructions under xylazine sedation with ring block with 2% Lignocaine hydrochloride theloressectoscopy was performed to relieve the obstruction at the tip, mid and base of the teat. After the treatment with theloressectoscopy ultrasonographic images on the 5th postoperative day confirmed the reduction in the size of the lesions. Theloscopic electroresection was a minimally invasive procedure, which can be performed by a single person and aided in restoring the esthetic appearance of the teat, anatomical and functional capacity, milk ability and quality of milk within a short period of time with minimum complications. Even though it was expensive and required expertisation, it should be considered as an alternative to conventional surgical methods in valuable dairy cows.

Keywords: Teat obstruction, Theloressectoscope, internal teat lesion.

INTRODUCTION

Milk flow disorders in cattle due to covered teat injuries are caused either by congenital deformities or acquired conditions as a result of trauma or knuckling milking pattern [1]. The most important goals of treatment of teat obstruction are to restore anatomical and functional capacity, milking ability and quality of milk within a short period of time. Management of teat obstruction usually includes invasive procedures viz; unguided teat surgery, open teat surgery and theloscopic electroresection. Theloscopic electroresection is a minimally invasive technique recommended for diagnosis and treatment of covered teat injuries especially at the distal part of the teat in cows [6]. Video-assisted theloscopic electroresection considered as an alternative to conventional surgical methods for teat obstruction in dairy cows [7]. The present paper discusses the Evaluation of theloressectoscopy for management of teat obstruction in 180 teats of milking cows for over a period of 3 years

MATERIALS AND METHODS

A total of 175 Jersey crossbred cows (180 teats) at a different stage of lactation were presented at the Department of Veterinary surgery and radiology, Teaching veterinary clinical complex, with the history of difficulty in letting down of milk was taken for the

present study. All the affected animals were subjected to ultrasound scanning using 7.5 MHz linear probe by water bath method with and without normal saline infused into the teat as contrast. After the assessment of the type and site of obstructions, all the animals were prepared by withholding feed for 24 hours and water for 12 hours prior to the surgical procedure. The cows were sedated using Inj. Xylazine at the rate of 0.1mg/kg b.wt administered intravenously and controlled on lateral recumbency. Local analgesia of the teat was achieved by ring block using 2% Lignocaine hydrochloride. Preoperatively all the animals underwent detailed physical and clinical examination followed by theloressectoscopy. Theloressectoscope consisting of straightforward telescope 0⁰ diameter 1.9/2.1 mm, fiber optic light transmission incorporated color code green, cutting loop, high-frequency code and protection tube, metal sheath with luer lock stop cock, silicone tubing set, Luer lock tube connector, trocar with blunt tip and cannula. Theloscopic examination of the teat cistern was performed by axial approach under aseptic precautions. The blunt trocar and cannula was inserted into the teat cistern up to the level of obstruction blindly through the streak canal in such a way to assess the extent of obstruction The trocar was replaced by the theloscope sleeve size of 1.9 x 2.1mm along with the wire snare and assessed the type and extent of the lesion (Figure 1). The size, nature of the lesion and other pathological changes was evaluated and documented as described by Rathod *et al.* [8]. After assessing the type, location and extent of the obstructive lesion by theloscopy, the lesion was well demarcated from the normal tissue. The teat cistern

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Figure 1: Theloresectoscope.

was filled with 3% solution of Glycine and simultaneous cutting the obstructive lesion at its origin in the teat cistern at the temperature of (80-90⁰ c) and coagulation at (80-90⁰ c) was performed using a wire snare connected to an underwater diathermy unit with the maximum capacity of 400 watts. After resection, the quarter was flushed with 0.9% normal saline to remove the blood clots/tissue remnants and milk [3]. Modified polyvinyl chloride tube (No:10) retained in the sinus for maintaining the patency. Blood tinched milk was noticed at least for 5 -10 days post operatively were treated with styptics and antibiotics parentally to prevent mastitis. Post treatment teat patency was assessed by Ultrasonographic images on the 5th postoperative day.

RESULTS AND DISCUSSIONS

Ultrasound scanning using 7.5 MHz liner probe [4] by water bath method with and without normal saline

infused into the teat as contrast in all the affected animals was useful to assess covered teat lesions in cattle [2]. The Obstruction on the Right fore teats were 47 (26.1%), Right hind 49 (27.2%) left fore 50 (27.7%) and left hind 34(19%) respectively. According to the obstruction site, the teat tip obstruction 45(25%), (Figure 2) Mid teat obstruction (Figure 3) 58(32.3%)

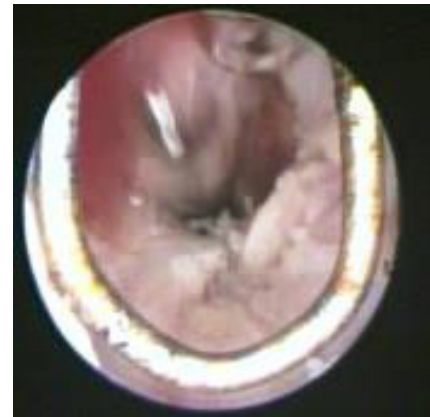


Figure 2: Teat tip obstruction.

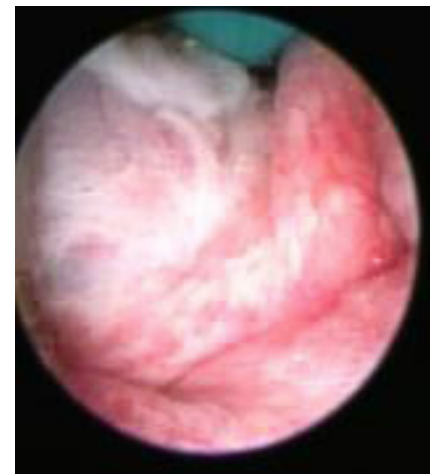


Figure 3: Mid teat obstruction.

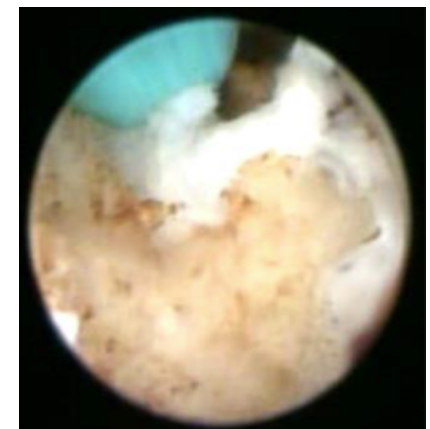


Figure 4: Teat Base obstruction.

Table 1: Teat Obstruction

Type/site of obstructions	Right fore teat	Right hind teat	Left fore teat	Left hind teat	Total
Tip obstruction	13	14	9	9	45 (25 %)
Mid-teat Membranous	12	5	8	7	32 (17.8%)
Mid-teat Diffused	5	9	9	3	26 (14.5 %)
Teat base-membranous	9	10	14	7	40 (22.2 %)
Teat base- diffused	8	11	10	8	37 (20.5 %)
	47 (26.1%)	49 (27.2) %	50 (27.7%)	34 (19%)	180

(membranous obstruction 32 (17.8%) diffused obstruction 26 (14.5 %). Teat base obstruction (Figure 4) 77(42.7%) ((membranous obstruction 40 (22.2%) diffused obstruction 37(20.5%) (Table 1) were observed.

After the treatment with theloressectoscopy, in teat tip obstruction, the ultrasonographic images on the 5th postoperative day confirmed the reduction in the size of the internal lesion. Other important features were, presence of anechoic region in the teat wall indicative of dilated blood vessels, hyperechoic mucosa of teat cistern and hyperechoic mucosal lining of the teat cistern showing inflammation. Ultrasonography was found to be a fast, accurate non-invasive means for investigation of structural alterations within the teat, assessing the location and nature internal obstructive lesions, postoperative evaluation of the teat as suggested by Franz *et al.* [5] and Szencziova and Strapak, [9]. In tip obstruction cases, 90%reduction in the obstructive lesion with increased patency of the teat was noticed (Figure 5). In Mid teat obstruction 70%-90% reduction in the obstructive lesion, which increased patency (Figure 6), with remnants of the lesion, reduced teat wall thickness and mild inflammation of the mucosa were observed. Approximately to an extent of 50-60% at the base obstruction cases (Figure 7). On the 5th postoperative day milk samples were showing pH 7, milk color was apparently normal in 95% and 5% showed subclinical mastitis. Milk yield and milk flow rate per quarter gradually increased up to 60-70%. Recurrence of delay in milk flow and mastitis were observed in 37 (20.5%) teats mostly, which were having obstruction at the base. Tip and mid teat obstruction cases were not presented for the recurrence of the condition over a period of 90 days. The poor success rate was due to poor owner compliance and extensive fibrosis of teat at the base level. In theloressectoscope is delicate complete resection of the obstructive lesions were not possible Even though there were postoperative

complications viz; haemorrhage, absence of milking for 3 to 5 days, initial slow milking and mild swelling of the involved teat, they could be resolved in all cows by five to ten days postoperatively. None of the cows that had undergone the surgery either developed milk flow disorders or was treated for mastitis during the period of observation. Rathod *et al.* [8] stated that teat endoscopy was an excellent diagnostic procedure for covered teat injuries and it was a minimally invasive

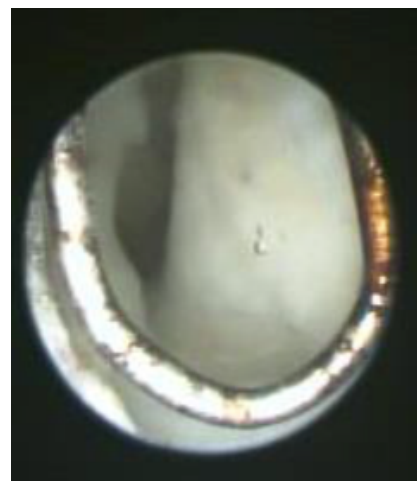
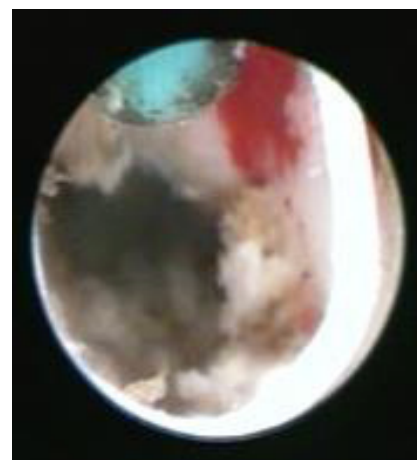
**Figure 5:** Milk flow noticed after relieving Teat tip obstruction.**Figure 6:** Patency (70-90%).



Figure 7: Patency (50-60%).

surgical therapy, provided an exact condition of the mucosa, intensity/ grade and eventual duration of pathological lesions. It required minimum time for accurate diagnosis of milk flow disorders and allowed safe and definite intervention for situation with comparatively less risk and inconvenience to the patient than the conventional methods for diagnosis, therapeutic and to monitor the treatment. To conclude, theloscopic electroresection was a minimally invasive procedure, which can be performed by a single person and aided in restoring the esthetic appearance of the teat, anatomical and functional capacity, milk ability and quality of milk within a short period of time with minimum complications. Even though it was expensive and required expertisation, it should be considered as

an alternative to conventional surgical methods in valuable dairy cows.

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