Surgical Treatment of a Cervico-vaginal Prolapse in an Elephant in Myanmar

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Introduction

Presently there are 2940 Asian elephants (*Elephas maximus*) managed by the Myanma Timber Enterprise (MTE) in Myanmar. All of these elephants are owned by the government and distributed around the country. Some elephants are utilized in logging and for carrying baggage from one camp to another during the rainy season. In addition, there are captive elephants in the country, which are privately owned and used in logging by private timber companies.

According to MTE records, the youngest female to give birth was 8 years old, and the oldest elephant gave birth at 46 years of age. Some females have given birth to more than six calves in their lifetime. On rare occasions females have suffered cervico-vaginal prolapse. During the last decade, MTE lost three female elephants due to this condition. As MTE field veterinarians, we tried to save them but were unsuccessful due to lack of experience and limitations in techniques and knowledge of appropriate surgical procedures.

Case study

The female elephant (Ma-3945) Myint Ngae, 47 years old, suffered a prolapse starting ten years ago. At the beginning, there was a 4-inch diameter bulge in the perineal region, which got larger year by year till it was about 22 inches in diameter. By the use of ultrasound scanning, the bulge was determined to be due to a cervico-vaginal prolapse. Consequently it was decided to treat her surgically.

Before surgery, the condition of the elephant was fit and free from any injuries, and she was eating, sleeping, and moving well. She could urinate, although it was sometimes difficult. Defecation was normal. Antibiotics and tetanus toxoid (ATT) were given pre-surgically as a preventive measure (Table 1).

Cleaning and disinfection

This is an important preparatory step for surgery. We cleaned the surgical site of all dirt using

Table 1. Pre- and post-operative medication. We gave antibiotics one week apart.

Time	Drug	Dosage
Before surgery (7 days)	Pen strep injection	12 Lakhs IM
During surgery	ATT (anti tetanus toxid)	5 ml IM
After surgery	Analgesin (anti-pain drug)	50 ml IM
	KCND	100 ml IM
	Amylite C (supportive treatment)	100 ml IV*
	Normal saline (supportive treatment)	2000 ml IV*
	Biozyme	125 g
	MOM	40 tablets
	Cetriazone (250 mg)	30 via BID IM

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Figure 1. Cleaning and disinfection of the surgical site.

disinfectant soap, fresh water and 2% tincture of iodine and shaved the site (Fig. 1).

Anaesthesia

The body weight of the elephant was estimated at 2516 kg using a formula based on chest girth. For general anaesthesia we used a combination of Xylazine (2%) and Ketamine (Fig. 2). At the beginning, we gave 6 ml Xylazine (2%) (139.32 mg) combined with 1 ml Ketamine (50 mg) intramuscularly. After 10 minutes, we gave again 23.32 mg Xylazine intravenously into the ear vein. The elephant was sedated and showed a relaxed vulva and dropping of the clitoris, and very slow movement of trunk and ears. We used a local anaesthetic, lidocaine, on the line of incision. Lidocaine was given along the incision line during the operation.

Surgical procedure

Before surgery we checked the bulge by ultrasound and detected a large amount of fluid inside. We chose a dorso-ventral incision line approximately 7 inches lateral from the perineal midline, near the right hind leg (about the area over the semimembranosus and semitendinosus muscle), to avoid post-op faecal contamination (Fig. 3). The elephant stood quietly without showing any distress. Upon incision we initially encountered some fascial layers and small blood vessels and avoided much bleeding. Finally we found the prolapsed vagina inside the vestibule. The bottom of the large bulge was hard. We tried to find the fluid inside the bulge by palpation; luckily we found the opening of the urethra entering into the bladder and felt the fluid inside the bulge through it.

We initially inserted a plastic tube (about 1/4 inch diameter) and drained the fluid. The fluid consisted of urine and transudate. No adhesions were present and there was little pus. Then we inserted a larger plastic tube (1/2 inch) and drained the area again. Some small stones came out with the fluid, and the size of the bulge reduced. Finally, the bulge became quite small and we were able to reposition it through the pelvic inlet (apertura pelvis) into its normal position.

Figure 2. Preparing and injecting the anaesthesia.

Figure 3. Surgical procedure.

After pushing back the cervix and vagina, we applied a pad to apply pressure from the outside, to help prevent re-occurrence of the prolapse, by supporting the area while it healed. The pad was made with foam and wood connected with ropes and tied on the body of the elephant. The condition of the elephant was good after surgery.

Suturing

First we carefully closed the layers of vestibule, the fascia and muscle by continuous suture, using absorbable catgut. The skin was closed by continuous nylon sutures in a mattress pattern (Fig. 4). During suturing, we applied antibiotic powder (Cicatrin powder) to each layer. We applied antibiotic ointmenton on the line of incision.

Post-surgery

The elephant defecated and urinated normally after the surgery. We provided care at the elephant camp after surgery and checked her blood profile daily (Table 2). We continued to check the ropes and pad on the body of elephant. One month after surgery the healing of the incision was good and the pad and ropes remained in place.

Conclusion

In the past some female MTE elephants died due to vaginal prolapse. This is the first time in MTE that a vaginal prolapse was successfully managed surgically. Everybody (Fig. 5) was excited that finally we were successful, and we had advanced our skills in veterinary medicine and improved the welfare of elephants, while gaining useful experience. As field veterinarians working in remote areas in Myanmar, we do not have fancy equipment but we have good will, and a passion and attachment to our elephants.

Figure 4. Suturing the incision.

Table 2. Blood profile of the elephant before and after the surgery.

Time	Day	PCV[1]	TP[2]	Hgb[3]	ESR[4] (mm/min)				Differential WBC[5] count				
		[%]	[g/dl]	[g/dl]	15 min	30 min	45 min	60 min	N[6]	L[7]	M[8]	E[9]	B[10]
Before	1	32	7.8	10.3	-	-	-	-	26	4	70	0	0
	2	33	8.4	12.0	40	106	120	123	33	9	58	0	0
	3	37	8.8	12.5	6	50	87	96	24	12	64	0	0
After	1	33	9.3	11.5	30	87	101	104	36	13	51	0	0
	2	32	9.5	11.8	33	80	98	102	33	14	53	0	0
	3	33	9.0	11.0	30	85	100	105	37	13	60	0	0
	4	33	9.6	10.0	40	90	101	119	38	12	50	0	0
	5	34	8.6	8.0	45	105	115	119	31	19	49	0	1
	6	34	8.6	10.5	17	101	114	117	41	17	42	0	0
	7	36	8.8	10.0	16	97	111	114	53	27	20	0	0
	8	38	9.0	11.0	27	90	99	102	50	24	26	0	0
	9	34	8.8	12.0	39	91	100	105	40	22	38	0	0
	10	34	9.2	12.0	26	86	107	117	41	15	44	0	0

[1]PCV = packed cell value; [2]TP = total plasma protein; [3]Hgb = haemoglobin; [4]ESR = erythrocyte sedimentation rate; [5]WBC = white blood cell; [6]N = neutrophil; [7]L = lymphocytes; [8]M = monocyte; [9]E = eosinophil; [10]B = basophil.

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Figure 5. Team and patient after the successful surgery.