

INTESTINAL OBSTRUCTION IN CAMELS

(*Camelus dromedarius*)

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ABSTRACT

Obstruction of the bowel was diagnosed in 21 camels at Veterinary Teaching Hospital, King Faisal University, out of which 17 were females and 4 males. Faecoliths were removed through enterotomy from the colon in 9 animals. Five more animals defaecated hard dry faeces within 1-5 days of the palliative treatment. Four animals had idiopathic ileus detected by laparotomy. Another 3 camels died soon after admission, one of them had ileus, volvulus and obstruction of the colon. All animals were anaemic, and had slight neutrophilia and slight lymphopenia but the average haematocrit was within normal limit.

Key words: Bowel, camel, dromedary, faecoliths, ileus, intestinal obstruction

Bowel obstruction syndrome constituted one of the major disorders of the digestive system in animals (Radostits *et al*, 2000). It encompasses a diversity of condition such as ileus, intussusceptions, volvulus, enteroliths and faecoliths (Tanwar, 1985; Singh *et al*, 2004; Al-Ani, 2004). This syndrome is characterised by depression and complete cessation of defaecation. Obstruction can occur in any part of the digestive tract but most often near the pylorus (Ramadan, 1994), in the small intestine, or in the colon (Tayal *et al*, 1985; Ramadan, 1994; Gahlot, 2000; Kohler-Rollefson, 2001). Idiopathic ileus and obstruction of the omasum and abomasum may lead to complete cessation of defaecation in cattle (Pearson and Pinsent, 1977; Misk *et al*, 2003). However, the latter conditions are less frequently reported in the camels. This study aims to report detail clinical signs, treatment and surgical management of 21 camels suffering from obstruction of the bowel.

Materials and Methods

The study was based on 21 animals admitted to the Veterinary Teaching Hospital, King Faisal University during 1996-2006 because they had ceased to defaecate 3-12 days before admission. The age, sex, type, duration of colic before admission, summary of surgical findings and treatment are listed in table 1. The animals were examined clinically and blood was randomly collected from the jugular veins of 3 animals for haematology and blood chemistry. Three animals died soon after examination and the carcass of one of them was available for postmortem

examination. Medicinal treatment was started immediately after admission.

Nine animals succumbed to surgical intervention through the right para lumbar fossa (3 animals) or through the left flank (6 animals). A distended compartment 1 (C1) was evacuated by creating rumen fistula before enterotomy.

The Clinical Findings

On presentations, the animals were anorexic, depressed and dehydrated. Abdominal pain was manifested by uneasiness, rolling from side to side and neck stretching. The abdomen showed bilateral distension in 8 animals (Fig 1) and the rumen was usually static. Some owners mentioned that the camel defaecated pellet shaped (small sized faeces simulating goat faeces) dung two days before admission, then it stopped defaecating. Dried flakes of mucous may remain around the anus and under the base of the tail. Rectal examination revealed only mucous plug tinged with blood. The C1 was impacted, tympanic or contained moderate amount of ingesta. One animal developed rectal prolapse secondary to persistent and continuous straining. Rectal temperature was either normal or subnormal. The mucous membranes were mostly pale.

The laboratory indices did not change greatly. Various haematological parameters recorded (mean values) were haematocrit (32 per cent), haemoglobin content (10.9 gm per cent), RBCs ($5.63 \times 10^6/L$), leucocytic count ($10.2 \times 10^3/L$), neutrophils (64.7) and

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Table 1. Details of the animals with intestinal obstruction.

No of cases	Age	Sex	Duration at presentation (days)	Treatment	Result
3	2-3 month	2F;1M	5-10	Surgery through right flank (3)	Faecolith removed, dilated caecum
6	4m-12 yr	5F;1M	5-12	Surgery through left flank (6)	Faecolith removed, impacted C1, and caecum
4	6m-4y	3D;1M	3-5	Laparorumenotomy	F.B compartment. 1 , impacted C.1, and C3, ileus
5	2-6y	5F;1M	5-12	Medicinal; Paraffin,	pass faeces in 3 hours to 5 days
3	5-12 y	3F	7-12	Died before surgery	Torsion, obstruction, ileus

lymphocytes (30.4 per cent). The serum protein, SGPT and SGOT were within normal limits. Animals were anaemic and showed neutrophilia and lymphocytopenia.

Treatment

Before surgical intervention, two litres of paraffin oil was given in an attempt to induce passage of the impacting material. Thereafter analgesic and spasmolytic drugs were given for the relief of colic. The animal was then taken to walk for a little distance. Antibiotics and intravenous fluid therapy using about 4 litres Ringer's lactate solution and about 4 litres of 5% dextrose were also given.

Surgery through the right flank

The animals were sedated with an intravenous dose of xylazine (Seton 2%, Barcelona Spain)/Ketamine HCl (Ketamidore, Richter Pharma AG, Wels, Austria) at the dose of 0.2 mg/Kg and 1mg/Kg, respectively. The right flank region was infiltrated with 2% lignocaine hydrochloride (Bomacaine, Bomac Laboratories Ltd., New Zealand).

A right flank laparotomy was done in 3 cases. The caecum was pulled out and evacuated with suction machine. The intestines were pierced using hypodermic needle so as to reduce its gas content. The hand was passed in the abdominal cavity to palpate the small and large intestine. The colon was exteriorised and the site of obstruction was determined. Obstructing material was removed by enterotomy. A piece of macaroni (2x1 cm diameter) was inserted inside the colon. The latter was sutured in Schmieden and Lembert pattern. Abdominal and skin closure was done as routine.

Surgery through the left flank

Alternatively, a left flank approach (Fig 2) was performed in 4 animals because the rumen contained large volume of fluid. The camels were restrained in the sternal position. After abdominal exploration, the rumen was brought to the operative field. A purse string suture was applied on its wall. A stab incision

was made at its centre then a 2 cm-wide polythene tube was inserted and the suture was tightened. The rumen was evacuated by suction. Then the tube was removed and purse string sutures were tightened. The contents of the caecum were also reduced. The colon was lifted to the operative field and the dried faecal mass (faecoliths) were removed (Figs 3-9). In two animals, the colon was found necrosed at the site of obstruction therefore a segment was removed and end to end anastomosis was done using 4 metric Dixon II suture materials. The abdominal cavity was douched with 5-10 litres of normal saline containing ample amount of broad-spectrum antibiotic. Abdominal and skin closure was done as routine.

A laparotomy was performed in 4 animals with gross distension but no obstruction was found in the colon. This animal improved with medicinal treatment.

Pathology

At necropsy, compartment 1 (C1) contained large amount of barley and hay and was severely distended with gas. The abomasum contained fluid and showed severe congestion. The caecum and colon appeared twisted (360 degree) around the long axis of the terminal ileum with complete obstruction at the twisted segment. The lung was diffusely congested and oedematous. Heart showed sub-epicardial and sub-endocardial haemorrhage of the left ventricle. The liver was pale. The abdominal cavity contained approximately 7 litres of blood stained fluid.

Discussion

Diagnosis and management of bowel obstruction in camel poses a challenge to the clinician due to difficulties in determining the aetiology, site and nature of obstruction. In early cases, faeces are voided in small quantities, more frequently with changed consistency and sometimes flatus. These signs may be followed by complete caessation of defaecation lasting for more than 3 days (Pearson and Pinsent, 1977). Moreover, other laboratory parameters could be within normal limits (Blood *et al*, 2000). At the time of

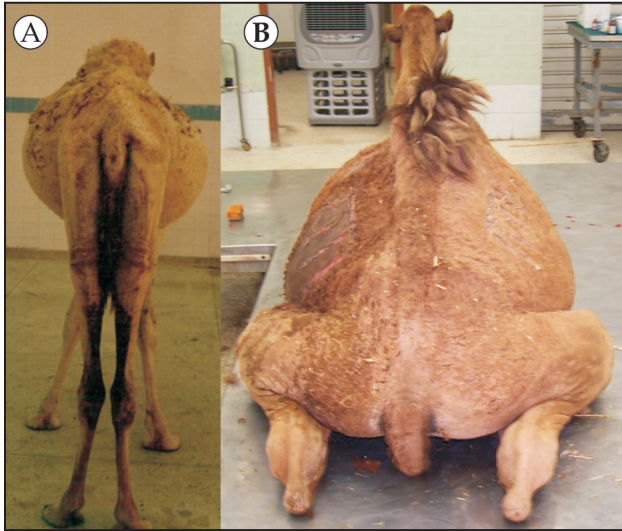


Fig 1. A. Bilateral distention of abdomen. B. Severe Rumen distention

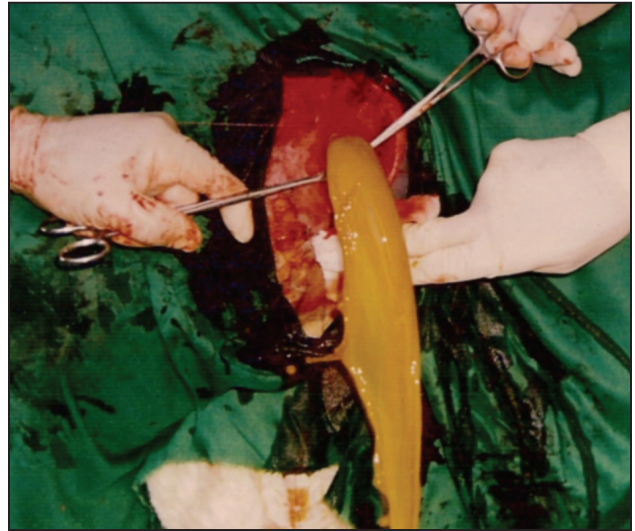


Fig 4. Evacuation of caecum.



Fig 2. Left flank prepared for aseptic operation.

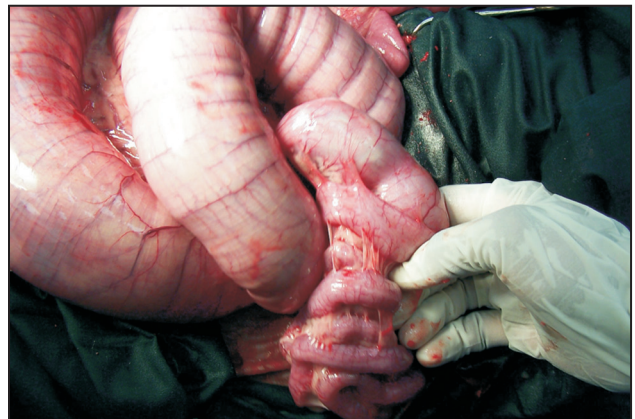


Fig 5. Obstruction caused by faecolith.



Fig 3. Caecum and colon brought to operative field.



Fig 6. Enterotomy for removal of faecolith.

presentation, several owners had made a preliminary trial with mineral oil but results were unyielding.

The decision to perform surgery was based on duration and severity of pain and abdominal

distension. With little distension on the left side, the right flank approach gave satisfactory results (Ramadan, 1994). This approach provides optimum access to the abomasum as well as to all part of the



Fig 7. Surgically recovered faecoliths.

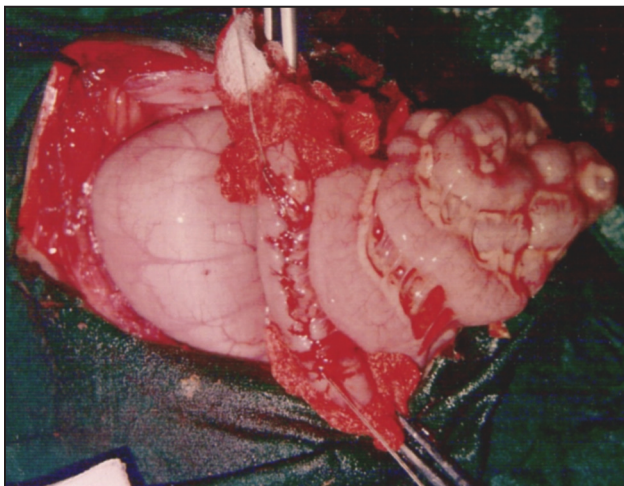


Fig 8. Closure of enterotomy site with Schmieden sutures.

small intestines. In the other hand, the left flank approach was ideal for evacuation of the contents of C1. This relieves abdominal distension, and prevents regurgitation. The colon and caecum could be easily manoeuvred during the operation.

In this study, obstruction of the colon due to faecolith was noted at the centrifugal loop of the colon. In this region, the colon narrows as it enters the tight part of the spiral, its wall becomes thicker and it is in this part much of water is reabsorbed from the faeces (Ibrahim, 1983; Wilson, 1984; Smuts and Bezuidenhout, 1987; Tayal *et al*, 1985; Ramadan, 1994). Pearson and Pinsent (1977) found that 39 and 18% of intestinal obstruction in cattle were due to intestinal tympany (ileus) and intussusceptions, respectively.

In the present study, 5 cases were suffering from idiopathic ileus and 3 animals improved after palliative treatment. Generally, functional intestinal obstruction "ileus" can result from transient hypomotility or from chronic intestinal neuromuscular



Fig 9. Healed laparotomy wound in left flank.

derangement (Guilford and Strombeck, 1996). Intestinal ileus with tympany is a common cause of obstruction in cattle and undoubtedly resolves subsequently in response to palliative treatment in a proportion of cases. Unfortunately there is no way of identifying such animals at the onset of the illness (Pearson and Pinsent, 1977). Intestinal foreign bodies obstruction "in cattle" was about 2% (Pearson and Pinsent, 1977). Gameel *et al* (2000) noted foreign bodies in 19.7% camels at postmortem.

The age of affected animals of the study ranged between 2 months to 12 years. Similarly the coat colour of 16 of them was gray white, while the remaining 5 had brown or black coat (Majahim breed). This may simulate the hypothesis of considering the possibility of breed predisposition in the aetiology of the disease. Three camels in this study died during examination and 2 showed necrotic lesions and slight perforation of the colon during surgery. This highlighted the need for early diagnosis of bowel obstruction and prompt surgical interference.

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References

- Al-Ani FK (2004). Camel Management and Disease. Al-Sharaq Printing Press and Dar Ammar Book Publisher Amman, Jordan.
- Gahlot TK (2000). Surgery of dromedary camel. In: Selected Topics on Camelids, Ed. Gahlot T.K., 1st Edn. Sankhla Printers, Sugan Niwas, Chandan Sagar, Well, Bikaner-33401, India. pp 321-324.
- Gameel AA, Alhendi AB, Ramadan RO and Dafalla EA (2000). The incidence of foreign bodies in the stomach of camels (*Camelus dromedarius*). Journal of Camel Practice and Research 7:159-161.
- Ibrahim IA (1983). Some anatomical studies on the digestive system in the one-humped camel. Ph.D Thesis. Assiut University, Assiut, Egypt.
- Kohler-Rollefson I, Mundy P and Mathias E (2001). A Field Manual of Camel Diseases. Treatment and Modern Health Care For The Dromedary, ITDG Publishing 103-105 Southampton Row London WC1BL 4HL. UK.
- Misk NM, Semieka MA and Ahmed FA (2003). Studies on omasal and abomasal disorders in cattle and buffaloes. Journal of Egyptian Veterinary and Medical Association 4:331-350.
- Pearson H, Pinsent PJN (1977). Intestinal obstruction in cattle. Veterinary Research 101:162-166.
- Radostits OM, Gay CC, Blood DC and Hinchcliff KW (2000). Veterinary Medicine. A Text Book of the Diseases of Cattle, Sheep, Pigs, Goats and Horses. 9th Edition, New York, W.B. Saunders Company Ltd. pp 171-172.
- Ramadan RO (1994). Surgery and Radiology of The Dromedary Camel. R.O. Ramadan, King Faisal University, Saudi Arabia.
- Singh J, Singh AP and Patil DB (2004). The digestive system. In: Ruminant Surgery, Eds. Tyagi RPS and Singh J, CBS Publishers and Distributors, Delhi. pp 209-218.
- Smuts M and Bezuidenhout AJ (1987). Anatomy of the Dromedary. Oxford University Press.
- Tanwar RK (1985). Intestinal obstruction in a camel - a case report. Indian Veterinary Medical Journal 5:31-32.
- Tayal R, Sharma SK, Singh AP and Singh Jit (1985). Obstruction of the colon in a camel. Haryana Veterinarian 24:64-65.
- Wilson RT (1984). The Camel. Longman Group Limited. Longman House, Burnt Mill, Harlow, Essex, U.K.