Bladder stones (calculi) as one cause of straining (tensimus) and rectal prolapse in bare nosed wombats

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Rectal prolapse is the end result of severe straining (tenismus). It may have several causes including constipation, severe rectal and colonic irritation and weakness of the pelvic floor or anal sphincter mechanism.

Three types of prolapse are recognised.

1. **Complete prolapse**. Here the rectum protrudes from the anus (cloaca)

2. **Partial prolapse**. The mucosal lining of the terminal rectum prolapses

3. **Internal prolapse**. The anatomical structure (in the main muscles) that support the terminal rectum are weakened and the rectum prolapse or "diverts" into the space usually occluded by those structures. In domestic small animals this is often called a "perineal hernia".

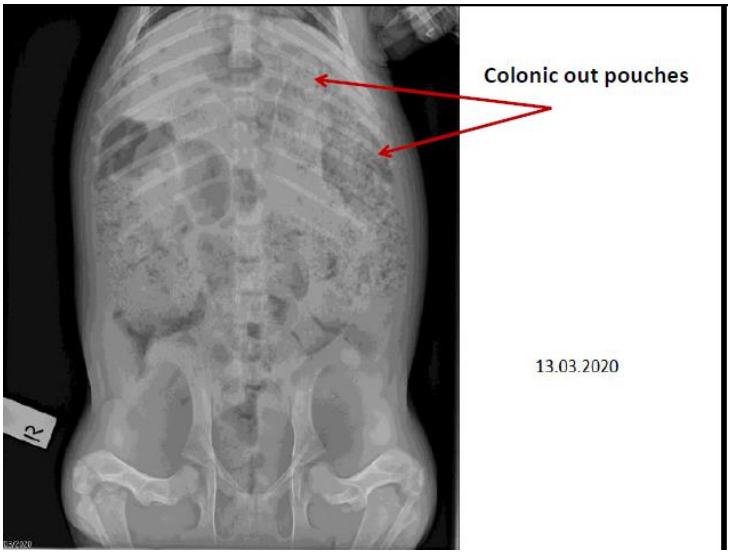
Types 1 and 2 are most often reported in wombats.

Anecdotally, two main conditions have been reported as causal agents for the prolapse.

a. Coccidiosis
b. Constipation.

Coccidiosis may result in severe rectal irritation with tensimus to the degree that type 2 (most commonly), or type 1 prolapse occur. Treatment with coccidiostats; return of the rectal mucosa (type 2) or the rectum (type 1) to its anatomical position followed by the short term insertion of a purse string suture through the cloaca to "hold" the rectum in place until the irritation subsides (usually 3-5 days) is adequate management.

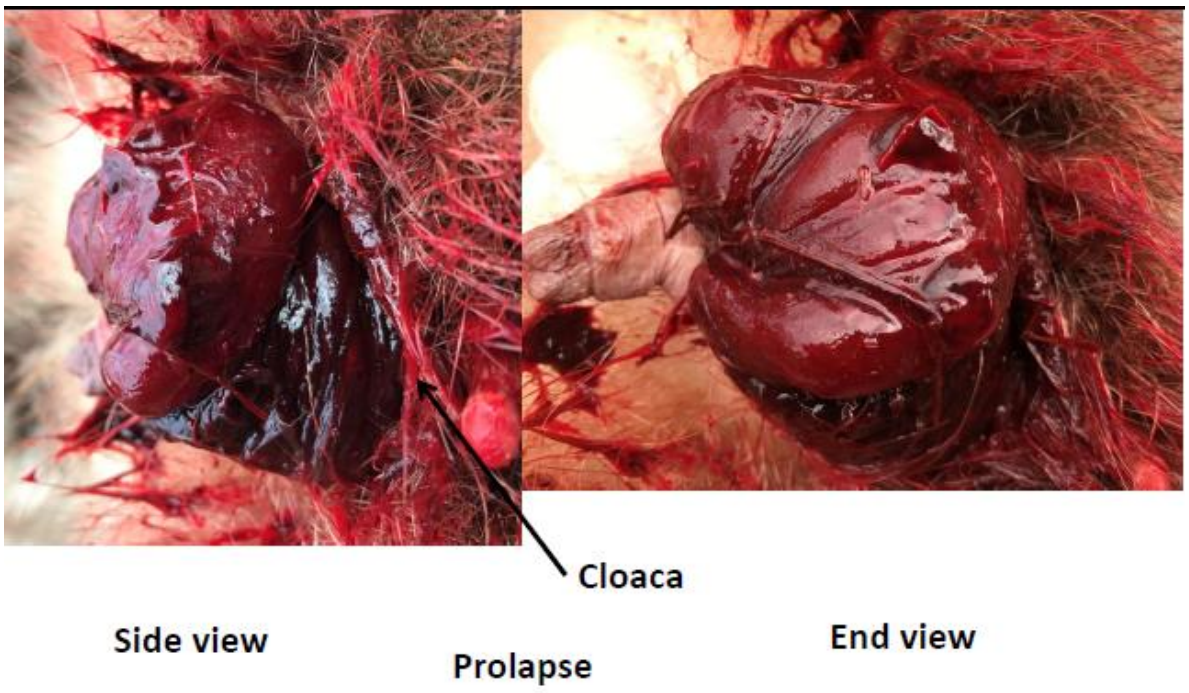
Constipation. On abdominal xrays an accumulation of large intestinal (colonic) contents is seen in the colon as it sits in the region of the stomach before descending (descending colon) to the rectum thence the cloaca.

Figure 1. 

The wombat has two out pouches from its colon in this area (fig 1, Gowland,1973; Barboza and Hume, 1992). These are critical for the digestion of food. They are attached to the abdominal wall near the stomach and consistently give the impression of an impacted colon.

Enemas used to “clean” the colon fail as these out pouches remain full of undigested material (often described as “faecal material”).

Figure 2.



A third (but rare) cause of prolapse is an intussusception (Fig 2), where the proximal (front) end of a segment of bowel telescopes into the distal segment. The inner segment’s blood supply becomes compromised and if the problem is not corrected as a surgical emergency that segment can die and result in death of the patient. The definitive diagnosis of this problem is made using x-rays or sometimes an ultrasound. The wombat in this case

presented in extremis and was euthanised on humane grounds. At post-mortem, approximately 300mm of the proximal colon had concertinaed into the distal 300mm and prolapse out the cloaca. The entire inner colon had lost its blood supply. The cause of intussusception remains unknown but stress (Canfield and Cunningham, 1993), or segmental hypermotility are possible causes.

A fourth cause of rectal prolapse has been seen in two wombats. Namely **Urinary bladder stones.**

Daisy a juvenile wombat (approximately 9 kg) had been presented to her local veterinary hospital with reoccurring tensimus and rectal prolapse. Daisy was treated for constipation. The prolapse (some 20mm long) was reduced.

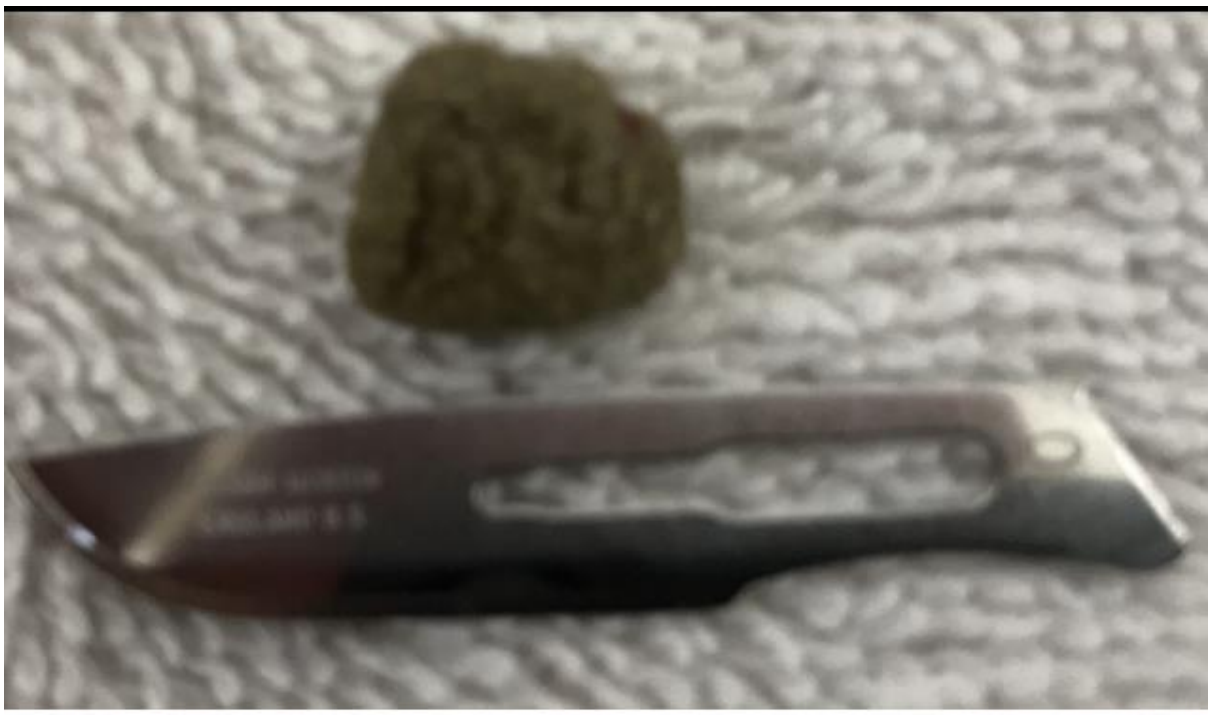
The prolapse reoccurred (50mm long). I saw Daisy who was distressed with a prolapsed rectal wall that had been severely compromised. Daisy was euthanized on humane grounds.

Post-mortem findings

The colonic out pouches were full of undigested material

The descending colon and rectum were empty

The urinary bladder was small and intra-pelvic. It contained a stone (calculus) approximately 10mm in diameter (Fig 3.)



#10 scalpel blade

On analysis the calculus contained 20% Calcium Oxalate and 60 % Calcium Phosphate, Magnesium Ammonium Phosphate 20%.

Bert

A juvenile male weighing 6Kg was presented to the local veterinary hospital with a 30mm long rectal prolapse. The prolapse was reduced and medication for his constipation was given.

The following day Bert was re-presented, this time with a 70mm long prolapse. Bert was anaesthetised, a urinary catheter placed, urine collected for laboratory analysis and a negative contrast (oxygen was injected into the bladder to provide contrast) x-ray was taken.

A silhouette of a suspected calculus was seen on the x-rays (fig4.). Urine analysis found both blood and crystals.

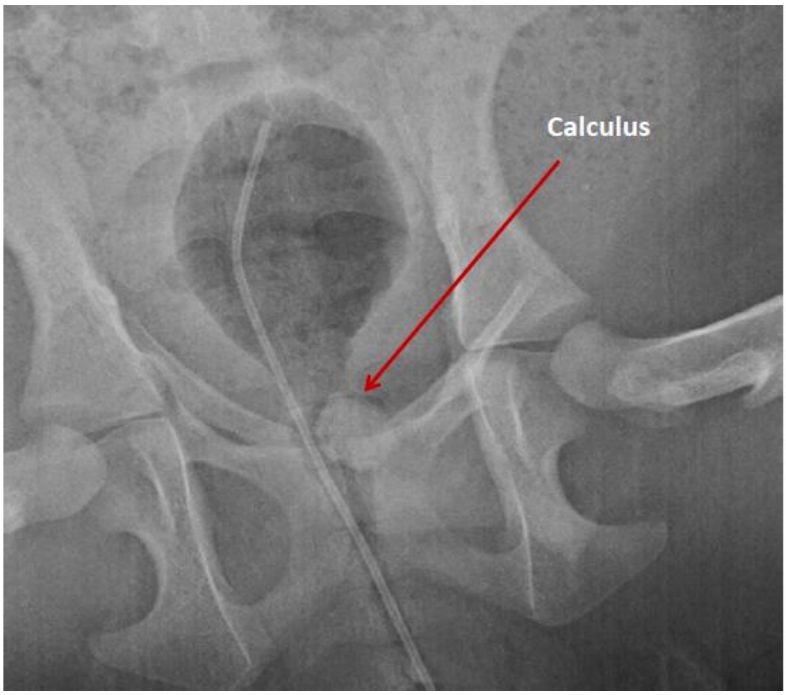


Figure 4.

Bert underwent surgery to remove a 10 mm diameter bladder calculus.

On analysis, this calculus was composed of Calcium Phosphate 80%, magnesium Ammonium Phosphate 20%.

Bacteria were grown from a swab taken from the surface of the bladder lining (mucosa). Antibiotics based on the sensitivity of the bacteria were given for the first 14 post-operative days.

Bert is doing well.

Discussion.

Carnivores have acid urine. If carnivores get a Streptococcus bladder infection their urine becomes alkaline and they develop Phosphate calculi (called struvite calculi).

Herbivores have alkaline urine.

If sheep and goats require a Calcium (Ca) to Phosphate (P) ratio of 2-2.5:1. If they are fed supplements that contain excessive amounts of Phosphorus they develop struvite calculi. A literature search has failed to find what the Ca:P should be fed to wombats.

Both of these animals had been given Biolac as their milk source. Their diet was supplemented with local grass (mostly native) and meadow hay (off site) Both had received small supplements of a horse pellet (Mitavite Economix). This supplement has a Ca:P of 1.7:1. Daisy was supplemented with 5 pellets whilst Bert received “small handful” daily.

Native grass vary in their Ca:P depending on soil types and fertilization.

Both of these wombats were raised during the drought so the quality of the hay and grasses fed may have been questionable.

The cause of the formation of the calculus in both wombats remains unknown.

Water loss in wombats

Wombats have an innate capacity to conserve water

In water deprived laboratory animals respiratory and skin (cutaneous) loss account for 77% of total loss, urine for 17% and faecal loss for 5% (Wells, 1973)

Within 12 hours following rehydration in water deprivation trials, wombats regain half the total body weight lost over 21 days without any apparent change in plasma electrolyte values (Wells,1973).

In the field, changes in total body water parallel changes in faecal water with only little change in key plasma electrolytes (Sodium and Potassium) [Wells, 1973]

It would appear that kidney/urinary tract modulation of water and key electrolyte balance in wombats is markedly different to that seen in other species.

In summary

Until demonstrated otherwise, the diets of “wombats in care” needs to mimic known diet for other small herbivores. That is, they should be fed diets with a Ca:P of between 2-2.5:1. Supplements such as Horse pellets should also have a similar Ca:P.

If the hay fed has come from a field recently fertilized with a Phosphate fertilizer, the hay may contain more Phosphorus than permitted.

Native grasses should be sourced from “virgin” country where possible.

Any wombat presenting with tenismus or rectal prolapse should have its urinary tract included in any clinical investigation.

References

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