




## CLINICAL REPORT

## Ischial and Pubic Osteotomy Approach for Surgical Removal of Extensive intra Pelvic Uterine Fibroma in Two Dogs

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## ABSTRACT

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This case report describes successful surgical removal of large intra pelvic fibromas in two dogs. One was an eight-year-old mixed breed female dog presented with a vaginal mass which was palpable on digital rectal examination. It extended from the vagina to the pelvic brim. A CT scan was performed which defined the extent of the mass clearly. The other case was a ten-year-old mixed breed female dog presented with a mass palpable in the pelvic canal. Both the cases were confirmed to be a fibromas by fine needle aspirate. As complete excision of the masses was unmanageable through either midline or vaginal approach, they were successfully resected through bilateral pubic and ischial osteotomy approach. An ovariohysterectomy and partial vaginectomy was performed in the first dog at Veterinary Teaching Hospital, Madras Veterinary College, Chennai, India and an ovariohysterectomy was performed in the second dog at Veterinary Teaching Hospital, School of Veterinary Medicine, Trinidad and Tobago.

## Introduction

Adequate exposure to the pelvic canal is often required to successfully manage surgical lesions of the intra pelvic structures. The anatomical structures that can be accessed are the pelvic urethra, vagina, rectum and prostate. These structures can be exposed partially by pubic osteotomy, pelvic symphysiotomy and bilateral pubic and ischial osteotomy. While the first two techniques provide a restricted access to the pelvic canal, bilateral pubic and ischial osteotomy may be used for lesions requiring greater exposure. This paper describes successful surgical management of a vaginal fibroma by bilateral pubic and ischial osteotomy in two dogs.

## Case Description

An eight-year-old mixed breed female dog was brought to the Veterinary Teaching Hospital, Madras Veterinary College, Chennai, India with a history of dysuria and tenesmus over 2 months. On digital rectal

examination, a hard mass was palpable in the vagina extending cranially up to the pelvic brim. A CT scan was performed using a third generation 16 slice Toshiba CT machine that showed a mass measuring 127.1 × 47.8 mm (Figure 1). The other dog was a ten-year-old female mixed breed dog that was presented with a mass palpable in the pelvic canal. A radiograph revealed a soft tissue density in the pelvic canal. No significant changes were noticed on routine blood and biochemical examination. Fine needle aspirate confirmed both the masses as fibromas. As access to the mass and complete removal would be limited either through a vaginal approach or a midline approach due to its location and extent, bilateral ischial and pubic osteotomy approach was opted.

## Treatment and Outcome

The 8-year-old dog was premedicated with a combination of midazolam (0.5 mg/kg) and dexmedetomidine (5 µg/kg) intramuscularly. The 10-

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year-old dog was premedicated with a combination of midazolam (0.25 mg/kg) and butorphanol (0.2 mg/kg) intramuscularly. Anaesthesia in both the dogs was induced with propofol (4 mg/kg) intravenously and maintained with 2% isoflurane in oxygen.

With the dog in dorsal recumbency, a ventral midline incision was made from the umbilicus to the ischium. The junction of the left and right adductor muscles was incised and elevated subperiosteally using a Freo periosteal elevator. Four proposed osteotomy sites were marked; (Figure 2) two in the pubis and two in the ischium.<sup>1</sup> Two holes were drilled; one on either side of the each of the four osteotomy sites (Figure 3). A 22 G stainless steel wire was passed through the pre drilled holes prior to osteotomy (Figure 4). A malleable retractor was used to protect the internal obturator nerves while drilling. Both the pubis and the ischium were osteotomized with an osteotome (Figure 5). Both the internal obturator muscles were elevated sub periosteally to the corresponding sides. The osteotomized bony plate was reflected cranially leaving the prepubic tendon intact. The urethra was identified and protected from the dissection plane (Figure 6). The vagina was pulled cranially to allow transection as caudally as possible.<sup>2</sup> A partial vaginectomy along with ovariohysterectomy was performed with complete excision of the mass at this time. The osteotomized and cranially reflected bony plate was replaced and stabilized with a 20 G orthopaedic wire through pre drilled holes (Figure 7). Similar technique was adopted in the other dog (10-year-old mixed breed) except that a simple ovariohysterectomy was performed cranial to the cervix with complete removal of the mass.

Both the dogs were ambulatory by the 3rd day post operatively. However, strict cage rest was advised for 6 weeks. Over telephonic follow up after 3 months, the clients confirmed that the dogs were doing very well post operatively.

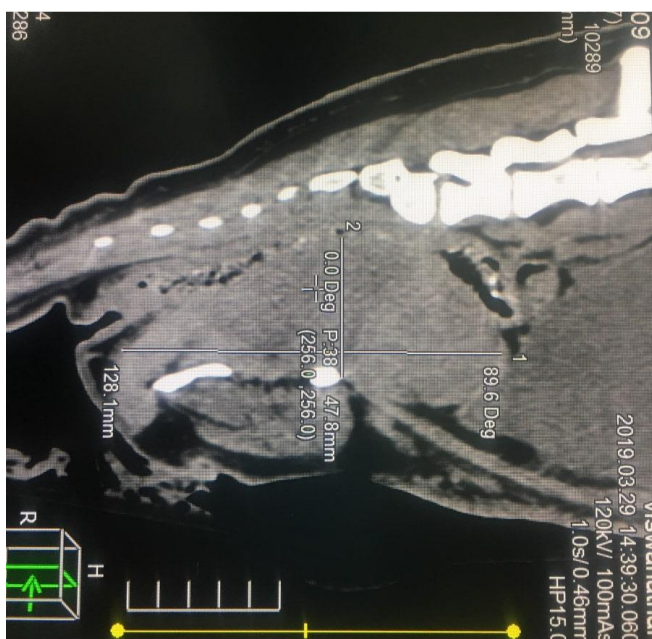


Figure 1. CT image of the vaginal and uterine mass.

## Clinical Relevance

Gaining access to the pelvic canal is vital for successful management of lesions that require surgical intervention in this region. Various techniques either alone or in combinations have been described for intra pelvic exposure such as pubic osteotomy, symphysiotomy and ischial osteotomy.

Pubic osteotomy has been used for the management of prostatic neoplasia and abscessation and to gain access to intra pelvic rectum.<sup>3,4</sup> Apparently this technique provides access only to the most cranial intra pelvic structures. In the presence of extensive disease, achieving adequate exposure would be a limiting factor with pubic osteotomy

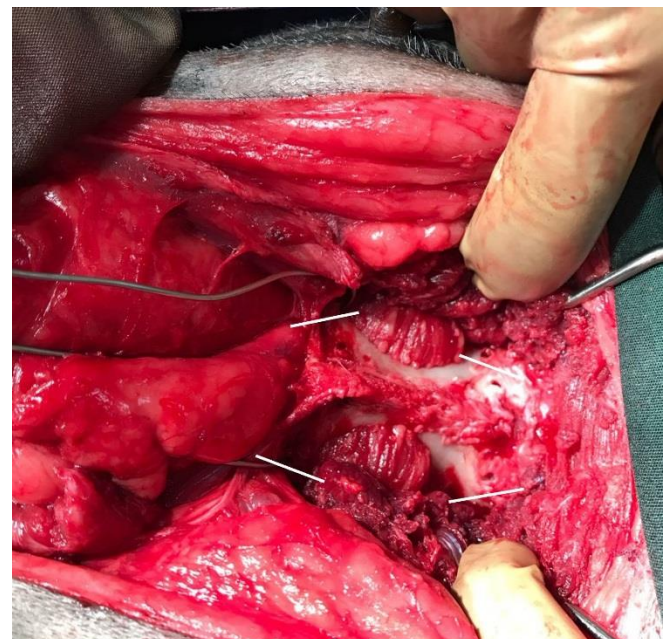


Figure 2. Proposed osteotomy sites shown in solid white lines.

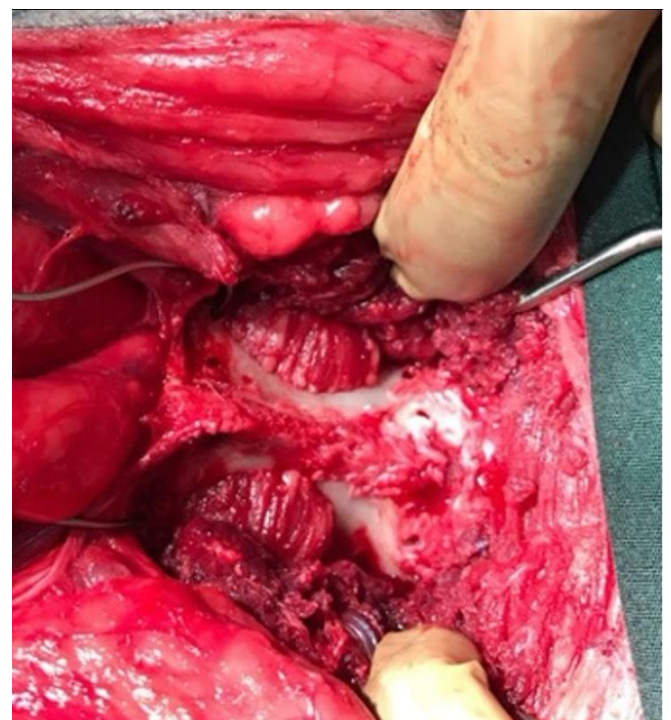
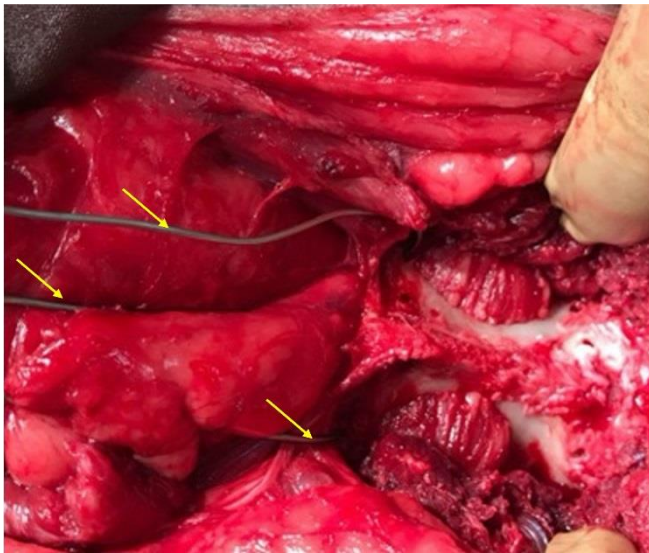


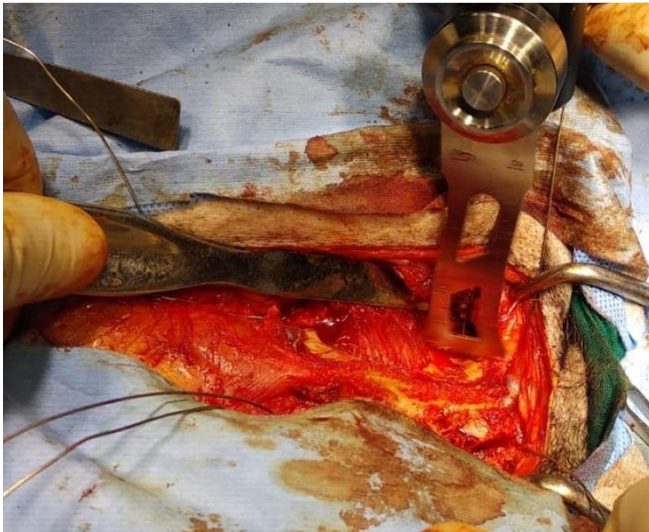
Figure 3. Predrilled holes in the pubis and ischium.



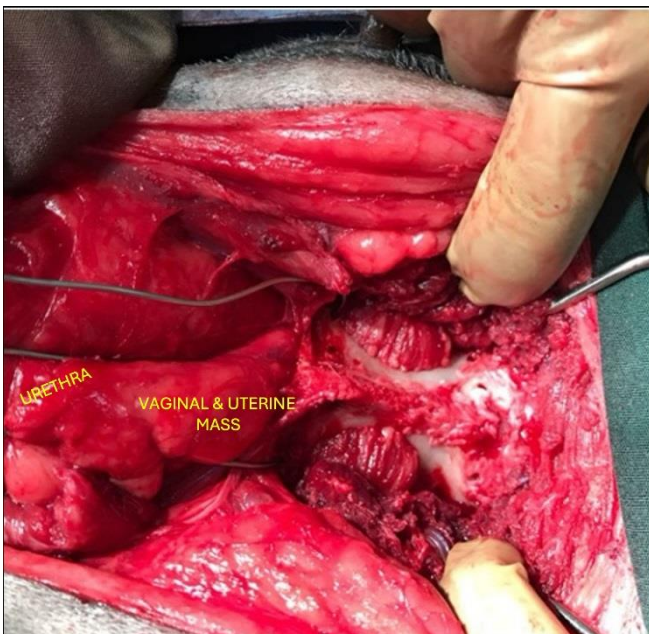
**Figure 4.** 22G SS wire being passed through predrilled holes (yellow arrows).



**Figure 7.** Osteotomized bony plate stabilized with orthopaedic wires.



**Figure 5.** Pubic and ischial osteotomy in progress (Note the SS wires in place).



**Figure 6.** Urethra moved away from dissection plane (Note the mass extending cranially under the ischium).

and would involve use of retractors to widen the osteotomy site which would be difficult in large dogs.<sup>1</sup>

Symphysiotomy is likely to provide a better access to pelvic canal structures than pubic osteotomy. Various surgical lesions such as neoplasia, urethral tumours, vaginourethroplasty, and vaginal vascular ectasia have been managed successfully through symphysiotomy. An experimental study on a 40 lb dog achieved a 5 cm pubic separation using retractors after symphysiotomy.<sup>5-7</sup>

A combined pubic and ischial osteotomy provides excellent exposure to the entire pelvic canal for the removal of lesions of the urethra, vagina and prostate,<sup>1</sup> for the removal of a rectal tumour in one dog, resection of urethral and vaginal tumours in another dog and for repair of a catheter induced intrapelvic urethral tear in a bitch.<sup>8,9</sup> Earlier techniques used for ischial and pubic symphysiotomy describe incising a portion of the prepubic tendon (cranial pubic ligament) followed by elevating the internal obturator muscle subperiosteally either on the left or right side allowing reflection of the osteotomized pubis and ischium to one side.<sup>1,10</sup> But in the present technique, the authors did not incise the prepubic tendon. After osteotomy, both the internal obturator muscles were elevated subperiosteally to the respective sides. The osteotomized segment was reflected cranially to leave the prepubic tendon intact. This avoided additional holes being drilled in the cranial aspect of the pubis to fix the prepubic tendon as described earlier.<sup>10,11</sup> Preserving soft tissue attachments to the bony flap can avoid complications such as possible infection and sequestration of the avascular bony segment with pubic and ischial osteotomy.<sup>12</sup> The authors are of the opinion that preservation of the prepubic tendon might help avoid this potential complication.

Meticulous care was taken to protect the internal

obturator nerves during osteotomy by using malleable retractor. Dissection of the adductor muscles was done exactly on the midline to minimize haemorrhage. Stainless steel wire has remained the choice of suture for stabilization of the central bony plate.<sup>1,8,12</sup> Interestingly, polydioxanone has also been used in a cat and 3 dogs whose weights ranged from 5.9 to 25.4 kg.<sup>10</sup> In the present cases, orthopaedic stainless steel wire was used for stability. The internal obturator muscles were sutured in place before stabilizing the osteotomized body plate.

Five different surgical procedures to approach vaginal diseases, namely, partial and complete vaginectomy, partial vestibule-vaginectomy, vulvo-vestibule-vaginectomy and vulvo-vestibulectomy, without the need for osteotomies have been described.<sup>2</sup> All these procedures except partial vaginectomy and vulvo-vestibulectomy, mandated repositioning from dorsal recumbency to sternal recumbency. Similarly subtotal vaginectomy for the management of extensive vaginal disease in 11 dogs through a combined abdominal and vestibular approach has been described.<sup>13</sup> The authors believe that bilateral pubic and ischial osteotomy approach is a more straight forward approach for managing intra pelvic pathologies despite reports of reluctance to use this procedure due to misconceptions regarding postoperative complications, extended recovery time and technical difficulties.<sup>1</sup>

The present report emphasizes the use of bilateral pubic and ischial osteotomy for dogs with intra pelvic lesions involving the rectum, prostate, vagina and urethra. The authors also report a slight variation from the earlier techniques in which the osteotomized bony plate was reflected cranially, avoiding severing of the prepubic tendon. The surgical exposure achieved by the technique described in this paper was comparable to that achieved by incising the prepubic tendon reported earlier.

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## Conflict of Interest

None to declare.

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