

## CASE REPORT

### A Case of Penile Strangulation in a Nine Year Old Boy

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This case report discusses penile strangulation caused by a ball bearing of a fidget spinner in a 9 year - old child. Initial examination revealed a 2 cm x 2 cm metallic ball bearing encircling the base of the penis with gross edema of the distal penile shaft and erythematous penile skin. To release the bearing, a modified string method was used. After removal, skin erosion was treated with debridement and applied with hydrocolloid dressing. Analysis and cross referencing of the case with literature suggest that successful extraction of a constricting object and treatment of penile strangulation, due to the varied nature, causes and effects of penile strangulation, greatly depends on immediate diagnosis and treatment. This spares one from immediate and long term complications, or necrosis with subsequent auto-amputation.

**Key words:** penile strangulation, fidget spinner

#### Introduction

A fidget spinner (Figure 1) is a toy consists of a small ball bearing in the center of a multi-lobed flat structure made from metal or plastic, that user can spin along its axis with little effort. These toys

are marketed as gadgets that can eliminate stress, anxiety disorder and attention deficit hyperactivity disorder (ADHD). However, there are no peer-reviewed studies nor scientific evidence to support the idea that they have therapeutic qualities.



**Figure 1.** Fidget Spinner.

Penile strangulation from constricting metallic and non-metallic objects is a rare but serious condition, caused by various instances, which if not treated immediately can lead to infarction and tissue loss. Documented for the first time by Gauthier in Paris in 1755, it is a urological emergency whose treatment is hinged on immediacy and accuracy to prevent irreversible penile ischemia, gangrene, and long-term complications.<sup>1</sup>

The use of constrictive objects on the penis is motivated by numerous reasons, which include prolonging penile erection, enhancing sexual performance, achieving erotic or auto-erotic effects, and satisfying sexual curiosity, to name a few.<sup>2,3</sup> Documented cases have delineated many such objects involved in penile strangulation cases - these include iron and steel rings<sup>4,5,6</sup>, iron bushing<sup>7</sup>, ball bearings<sup>8,9</sup>, bicycle cones<sup>10</sup>, bottles of various sizes and shapes<sup>11,12,13</sup>, nuts of various shapes<sup>14,15</sup>, wedding rings<sup>2,11</sup>, iron pipe<sup>16</sup>, rubber bands<sup>17</sup>, steel washers<sup>18</sup> and loop wrenches.<sup>9</sup> Other variations of penile strangulation are usually seen among the cases that concern children. These involve tourniquet injuries when bands, rings, or human hair wrap around the penile shaft. Specifically, hair thread tourniquet syndrome, or also known as penile tourniquet syndrome, has been described in patients of 4 months to 6 years of age.<sup>19</sup> These are among the numerous reports of penile strangulation in medical literature, suggesting that the number of self-inflicted cases has increased, but admittedly there is a void of information and local data.

When a potentially constrictive object is placed on a flaccid or partially erect penis, this often leads to secondary edema resulting in an inability to extract the object. This results in a penile compartment syndrome with an initial venous and lymphatic outflow obstruction distal to the foreign object, followed by arterial inflow obstruction, resulting in tissue ischemia and necrosis.<sup>20,21</sup> Furthermore, despite the essence for successful treatment and avoidance of further complications, oftentimes, there is delayed consultation and admission due to the embarrassing nature of the said condition. With the various possible objects as constrictions presented, and the resulting clinical consequences being varied, the selected

treatment option must be individualized, catering to the specific clinical situation. Presented is a case of 9 year old male who inserted his penis in one of the rings of a fidget spinner, which resulted in penile strangulation.

## The Case

A 9-year old male was referred to this institution, after enduring 10-hour history of penile pain and swelling. The patient's medical history started when he curiously inserted one of the holes of fidget spinner over his penis. However, failure to remove the object caused increased swelling and discomfort of the penis. After several failed attempts to remove the object by the primary care giver and due to the incessant pain, the patient was experiencing, he was brought to a local hospital for treatment. Unfortunately, attempts by the local hospital personnel to remove the constricting ring did not succeed, hence the said patient was eventually referred at this institution.

On admission, physical examination noted gross edema of the distal penile shaft and erythematous penile skin, which was warm on palpation and hyperesthesia. The constricting object had dimensions of 2 cm x 2 cm, described as a metallic ball bearing encircling the root of the penis (Figures 2 & 3). In the operation theater, patient was placed under spinal anesthesia. A manual stainless steel ring cutter was unsuccessfully utilized as the first mode of treatment. The string method (Figure 11) was then selected as the second mode of treatment wherein a 1cm gauze was used. The distal end was wound around the penis while the proximal end of the gauze was passed through the bearing. The proximal end of the gauze was then pulled, followed by winding and sliding the bearing down, simultaneously doing manual decompression.

The extracted bearing had an internal diameter of 8 mm and an outer diameter of 22 mm (Figures 4 & 5). The underlying skin erosion due to the constricted object was treated by debridement and dressed with hydrocolloid dressing, with a Foley catheter inserted for a day (Figure 6). After 3 post-operative days, the patient was discharged after



**Figure 2.** Pre-operative picture of penile strangulation



**Figure 3.** Pre-operative picture of penile strangulation

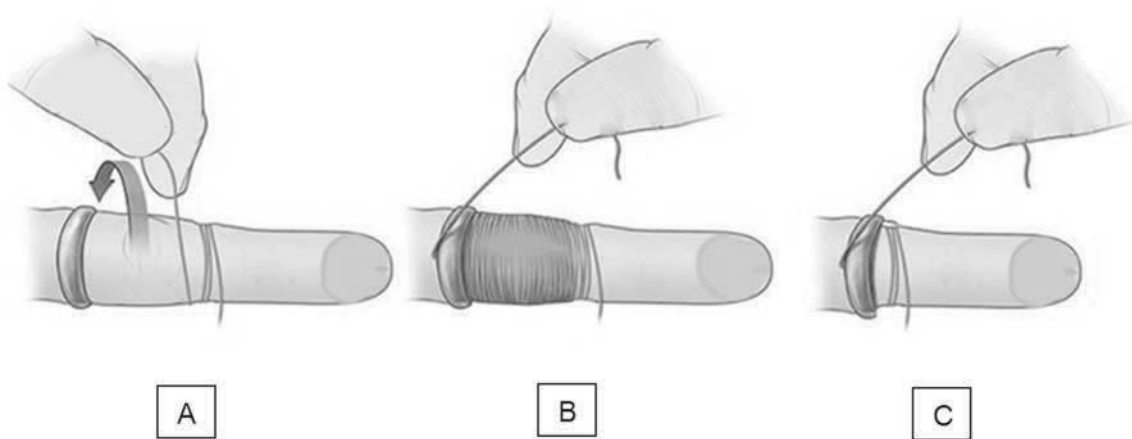
satisfactory recovery of the wound. Follow ups at the 1st, 2nd and 3rd week post - operatively where patient reported normal erectile function and noted good wound healing. (Figures 7,8,9 &10).



**Figure 4.** Fidget spinner



**Figure 5.** Ball bearing of Fidget



**Figure 11.** Schematic drawing of the modified string method.  
(A) Distal end of the gauze was wound around the penis .  
(B) The proximal end of the gauze passed through the bearing and was then pulled  
(C) Sliding the bearing down to the distal end of penile shaft



**Figure 6.** Day 1 Postoperative picture of penile strangulation



**Figure 9.** Day 21 Postoperative picture of penile strangulation



**Figure 7.** Day 7 Postoperative picture of penile strangulation



**Figure 10.** Day 21 Postoperative picture of penile strangulation



**Figure 8.** Day 14 Postoperative picture of penile strangulation

## Discussion

Cases of penile strangulation as caused by possible constricting objects is still a relatively rare occurrence. Generalization of the conditions of these cases is also difficult, compounded by the many various reasons that motivate actions that possibly cause penile strangulation. For instance, the cases that involve infants and children have inadvertent objects as foreign bodies unknowingly or unintentionally wrapped around the penis; some cases involved strings<sup>13</sup>, thread<sup>22</sup>, or hair tied around the penis.<sup>19</sup> In the present case, a ball

bearing of a fidget spinner was inserted over the base of the penis.

A grading scale for penile strangulation has been proposed by Bhat, et al.<sup>23</sup>:

Grade I. Edema of distal penis. No evidence of skin ulceration or urethral injury.

Grade II. Injury to skin and constriction of corpus spongiosum, but no evidence of urethral injury. Distal penile edema with decreased penile sensation.

Grade III. Injury to skin and urethra but no urethral fistula. Loss of distal penile sensations.

Grade IV. Complete division of corpus spongiosum leading to urethral fistula and constriction of corpora cavernosa with loss of distal penile sensations.

Grade V. Gangrene, necrosis, or complete amputation of distal penis.

Considering then the injury grades determined by Bhat, et al. it only follows that various techniques have also been utilized as treatment,<sup>2,3,8,16,24,25</sup> for removal of such constricting objects. These would include (i) string techniques with variations; (ii) penile aspiration techniques; (iii) cutting technique; and (iv) surgical excision of the penile skin and Buck's fascia. The present patient presented with a Grade II injury and was managed using a modified string method utilizing a gauze string.

Furthermore, main determinants which serve as criteria for selecting or formulating the course of treatment rests mainly on four factors - 1) the nature and dimensions of the constricting object, (2) time elapsed since strangulation, injury grade as delineated by Bhat, and 3) availability of the equipment and 4) expertise to administer treatment.<sup>2</sup>

## Conclusion

Penile strangulation is a rare clinical condition and the consequences can be severe and

irreversible. If treatment is not administered immediately and not catered to the specific case of the patient, different degrees of vascular obstruction may occur. The spectrum of several clinical syndromes is vast, from mild vascular obstruction that resolves after decompression to a severe gangrenous penis exacerbated with impaired renal function. Immediate and accurate diagnosis aided by efficient treatment is crucial to avoid further life-threatening and catastrophic complications of ischemic necrosis and auto-amputation.

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