

## Oncology

## Penile strangulation intentionally using a rubber band to prevent the development of penile cancer



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## ABSTRACT

Penile strangulation is a disease which causes circulatory failure in the distal part of the penis by the penis strangulated by foreign substances, and it is a rare emergency disease in urology. Most of the motives are for pranks, sexual intercourses and treatments of incontinence. We herein report the clinical course of penile strangulation complicated by penile cancer. Although the treatment was completed in accordance with its clinical stage of the penile cancer without any perioperative complications, it was considered that more case studies and further examinations would be needed to determine the treatment plans.

## Introduction

Penile strangulation is a disease which induces edema and pain by causing circulatory failure in the distal part of the penile strangulation by foreign substances, and eventually causes urethrostomy or penile necrosis if the strangulation prolongs.<sup>1</sup> Hard materials such as metal rings and soft material such as rubber bands or threads can be listed as materials used for strangulation.<sup>1,2</sup> Most of the motives are for pranks, sexual intercourses and treatments of incontinence or phimosis. We here represent the case which we intentionally strangulated the penis by a rubber band to prevent the development of penile cancer and treated in accordance with the clinical stage of penile cancer while struggling the timing to release the penile strangulation.

## Case presentation

A 65-year-old man visited this hospital as his penile pain, which he had started to felt two months earlier, gradually increased. He had anuria as he was on maintenance dialysis due to diabetic nephropathy. A penile tumor in a shape of cauliflower was found around the glans penis and the sulcus coronaries, and it was suspected as a penile cancer with naked eyes. Although the penile strangulation by a rubber band was found at the root of the penis, the edemas in the glans penis and around

the strangulation were slight, and the blood flow in the glans penis as not bad. The data were as same as ones of the other dialysis patients in general as his vital sign was stable without fever although CRP was high as 0.78mg/dl by a blood test. The tumor biopsy and contrast-enhanced CT were conducted without releasing the strangulation. The result of biopsy was squamous cell carcinoma. Intracavernosal invasion, lymph node metastasis or distant metastasis were not seen on contrast-enhanced CT. Four days after the first visit to this hospital, about 1 cm margins were taken from the strangulation part at the root of the penis and partial penectomy was performed (Fig. 1A–D). The pathologic diagnosis was well-differentiated squamous cell carcinoma, and the margins were negative. As the postoperative course had been favorable and serious complications had not developed, the patients left the hospital 2 weeks after the surgery. Six months has passed since the surgery and recurrences are not observed yet.

## Discussion

Penile strangulation is a disease which causes circulatory failure in the distal part of the penis by the penis strangulated by foreign substances, and it is a rare emergency disease in urology which requires early release of the strangulation. Based on previous research, we examined 204 cases in total, including 172 cases which Sasaki et al.

*Abbreviations:* CRP, C-reactive protein; CT, computed tomography.

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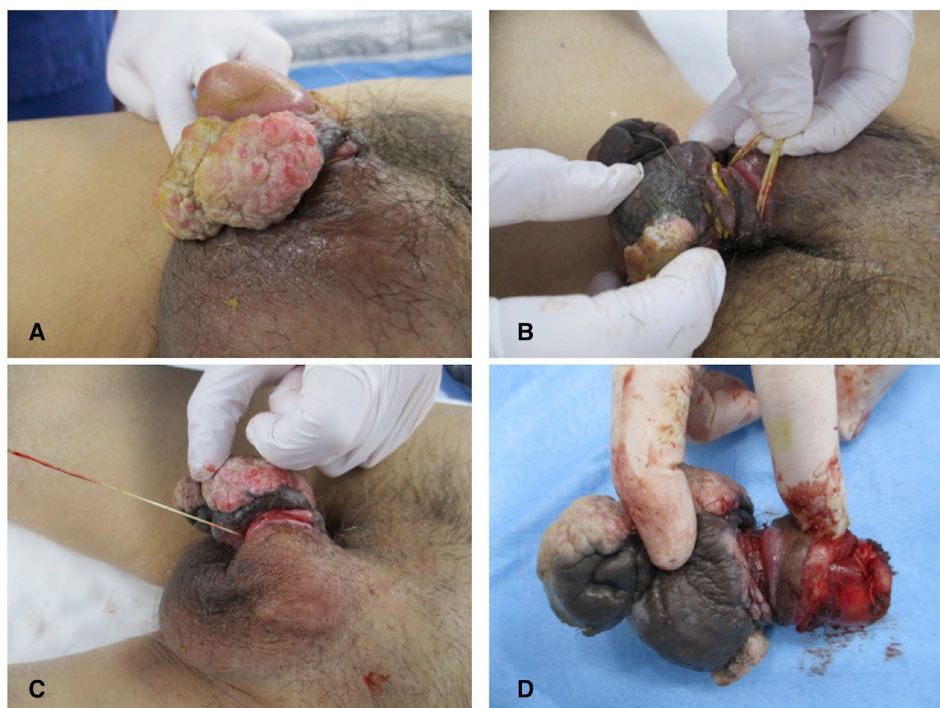
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**Fig. 1.** (A) Penile cancer around the glans penis and the sulcus coronaries. (B) Rubber band at the root of the penis. (C) Visible constricting marks after removal of the rubber band. (D) Surgical specimen after partial penectomy.

reported in 2014,<sup>3</sup> and 32 more cases extracted from the documents database in Japanese (Cinii, J-Stage, Japan Medical Abstracts Society) which had been reported by May 2019, in order to investigate the motives and the causes of the strangulations in Japan. On classifying the causing substances of the strangulation into hard substances and soft substances, it was found out the most common hard substances for strangulation were metallic rings (49.0% (73/149)), followed by metallic tubes (14.8% (22/149)), plastic bottles (12.1% (18/149)), rings (9.4% (14/149)) and plastic products (6.7% (10/149)). The ratio of unknown causes was 8% (12/149). The most common soft substances for strangulation were rubber bands (67.9% (36/53)), followed by rubber strings (13.2% (7/53)), threads (13.2% (7/53)) and vinyl products (1.9% (1/53)). The ratio of unknown causes was 3.8% (2/53). The most common motives to use hard substances for strangulation were for pranks (45.1% (64/142)), followed by sexual intercourses (32.4% (46/142)), treatments of incontinence (5.6% (8/142)) and treatments of phimosis (0.7% (1/142)). The ratio of unknown causes was 16.2% (23/142). The most common motives to use soft substances for strangulation were for treatments of phimosis (24.1% (14/58)), followed by sexual intercourses (19.0% (11/58)), pranks (15.5% (9/58)), treatments of phimosis (5.2% (3/58)) and prevention of tumor (1.7% (1 as this case)). The ratio of unknown causes was 34.5% (20/58). According to the statistics on this study as well as on the previous reports, it had tendencies that soft substances were used for the urological treatments, meanwhile hard substances were used for pranks or sexual intercourses. In this case, its motive was unique to prevent the development of the tumor, which did not seen in the previous reports.

Generally, strangulation of a penis closes venous and lymphatic return, and it affects the arterial circulation and is possible to cause penile necrosis if the situation continues.<sup>4</sup> Horiguchi et al. reported the case for the first time in this study that the patient strangulated his penis with a rubber band to boost his erection before the intercourse and ended up having blood poisoning even though he released the strangulation by himself few hours later.<sup>5</sup> It is important to keep in mind the possibility to have serious blood poisoning in case, if only temporally, the penile strangulation causes severe interruption of blood flow or penile edema

whether the penile strangulation is released or not. In this case, we found it difficult when to release the penile strangulation as it was complicated by penile cancer. The rubber band was only released at the surgery, 4 days after the first visit to this hospital, because of the following reasons: The patient's physical condition was stable, pain sensation of the penis remained, the penile edema and edema around the strangulation part were slight, the blood flow of glans penis was not bad, there were no cancer metastasis, the penile pain was controllable with pain killers, and it was needed to arrange the date of his final dialysis. As a result, although the treatment was completed in accordance with its clinical stage of the penile cancer without any perioperative complications, it was considered that more case studies and further examinations would be needed to determine the treatment plans for the penile strangulation complicated with penile cancer.

#### Conflicts of interest

We have no conflict of interest to disclose.

#### Consent

Written informed consent was obtained from the patient for publication of this case report.

#### Acknowledgements

None.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.eucr.2019.101003>.

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