

# Malignant Priapism Secondary to Metastatic Prostate Cancer: A Case Report and Review of Literature

Yu-Hsiang Lin, MD,<sup>1</sup> Jerry J. Kim, BS,<sup>1</sup> Ned B. Stein, MD,<sup>2</sup> Mohit Khera, MD<sup>3</sup>

<sup>1</sup>Baylor College of Medicine, Department of Medicine, Houston, TX; <sup>2</sup>Private practice, Houston, TX; <sup>3</sup>Baylor College of Medicine, Scott Department of Urology, Houston, TX

*Penile metastasis of cancers from other primary sites is a rare phenomenon that infrequently manifests as malignant priapism. We outline a case of an 84-year-old patient who presented with a 3-month history of painful priapism after radiation therapy for prostate adenocarcinoma. The patient underwent surgical penile exploration and cavernosal biopsy that revealed poorly differentiated cells suggestive of prostate cancer. Postoperative imaging demonstrated extensive regional and distal metastases. A review of the literature on penile metastases returned approximately 400 published cases, with priapism being the initial presentation in 20% to 50% of cases. Regardless of site of origin or subsequent management, most cases have shown very poor prognosis.*

[Rev Urol. 2011;13(2):90-94 doi: 10.3909/riu0508]

© 2011 MedReviews®, LLC

---

**Key words:** Malignant priapism • Penile metastasis • Prostate cancer

**M**alignant priapism is a term first used by Peacock in 1938 to describe persistent, nonsexual erections caused by invasion of malignant cells into the cavernosal sinuses and their associated venous systems.<sup>1</sup> Several more mechanisms of priapism secondary to malignancy have been postulated and described. Metastatic penile disease has historically been a rare event, mostly found to be originating from pelvic primary sites. Clinical manifestations of penile metastases vary widely, and include penile nodules, cutaneous findings, and priapism.<sup>2</sup> We describe an interesting case of malignant priapism secondary to penile metastasis following radiation treatment for prostate carcinoma, review

current literature on penile metastases and malignant priapism, and discuss the frequency, pathophysiology, mechanism, and prognosis of the disease process.

### Case Report

An 84-year-old man with diabetes and a known diagnosis of prostate cancer presented with a 3-month history of persistent erection that began when he finished radiation treatment. The patient was first diagnosed approximately 3 months prior to current presentation with locally advanced, high-grade prostate cancer with a Gleason 4 + 5 component. He had undergone radiation treatment, after which he noticed the onset of persistent erection that was constant and painful. The patient reported sharp and burning pain that was only mildly relieved by topical lidocaine gel. A Winter shunt for detumescence had been attempted at an outside facility 6 weeks earlier, but the procedure provided no significant improvement in symptoms. Similarly, phenylephrine treatment was attempted to no avail. The patient continued to have constant penile pain and erection. A magnetic resonance imaging scan of the penis was performed at the time of the previous procedure which demonstrated possible partial cavernosal thrombosis at the base of the cavernosa as well as plaques within the tunica albuginea. On physical examination, the patient had a rigid penile shaft and glans, with pain on palpation. There were no palpable nodules and no overlying skin necrosis of the glans. There was also decreased sensation along the shaft. Penile ultrasound at this time demonstrated flow of 15 mL/s. Given the urgency of the presentation, the patient underwent surgical repair of priapism and penile exploration. During the procedure, a cavernosotomy did not demonstrate any

significant amount of bleeding, raising concerns for a nonvascular etiology of the priapism. Further exploration demonstrated an extensive amount of fibrosis and necrosis of each of the cavernosal bodies. Intraoperative biopsies of the corpus cavernosa revealed adenocarcinoma consistent with metastatic prostate cancer. Postoperatively, the patient continued to complain of decreased penile sensation. A bone scan demonstrated metastases to the pelvic region, and computer tomography images showed metastatic disease in left lower lung, liver, and abdominal and pelvic lymph nodes. The patient and family were counseled extensively on the extent of his disease as well as treatment options. He was then referred to oncology for further medical management and palliative treatment.

### Discussion

Secondary penile lesions are a rare phenomenon, first described in 1870 by Eberth. Reviews of published case reports reveal that organs along the genitourinary tract, such as the

the penis published since September 2006 (Table 1). In our extensive search we tabulated 29 published case reports of penile metastases since September 2006,<sup>8-35</sup> including our present case. Building on the data from Cherian and associates, there are a total of 394 published cases of secondary penile malignancies to date. Of note, Zheng and colleagues found 22 cases of primary lung cancers metastasizing to the penis, a much higher count than that of Cherian and colleagues.<sup>26</sup> Of the 394 documented cases, 129 (33%) cases were of prostate origin, and bladder cancer was a close second with 118 published cases (30%). Interestingly, Chan and coauthors report that the *true* incidence of penile metastasis may be higher than that recorded, given that 12% of penile metastasis may be asymptomatic and discovered only on autopsy. Furthermore, unpublished cases were not accounted for during a review based on the literature search.<sup>2</sup>

Clinical manifestations of penile metastases include penile masses or nodules, ulceration, obstructive or irritative urinary symptoms, hematuria,

---

*Secondary penile lesions are a rare phenomenon, first described in 1870 by Eberth. Reviews of published case reports reveal organs along the genitourinary tract, such as the prostate and bladder, are the most common primary sites.*

---

prostate and bladder, are the most common primary sites.<sup>2</sup> Cherian and colleagues compiled a review of published cases of secondary penile tumors up to September 2006, listing a total of 372 primary site-specific cases of metastatic penile lesions.<sup>3</sup> Using a PubMed literature search for published human cases with English abstracts and the keywords “penile metastasis”, “penile metastases”, “malignant priapism”, and “secondary” AND “malignancy” AND “penis”, we present here an updated listing of the reported cases of metastatic lesions to

and malignant priapism in 20% to 50% of the documented cases.<sup>2,4</sup> Initial symptoms and the presence or absence of priapism in the 28 published cases since September 2006 are presented in Table 2. As was previously described, 7 of the 29 cases (24%), including the present case, presented with priapism.<sup>8-35</sup> Different mechanisms of persistent erection due to malignancy have been described, with a distinction between low-flow and high-flow priapism. Most incidences of malignant priapism are considered to be low-flow priapisms and are

**Table 1**  
**Primary Sites of Penile Metastases Discussed in Published Reports**  
**Since September 2006<sup>3</sup>**

Primary Site	New Cases Since Sept 2006	Total Cases (%)
Prostate	4	129 (33)
Bladder	6	118 (30)
Recto-sigmoid	6	54 (14)
Kidney	–	30 (8)
Lower GI tract (excluding recto-sigmoid)	1	16 (4)
Testis	1	12 (3)
Lung	3	7 <sup>a</sup> (2)
Upper airway	–	4 (1)
Upper GI tract	3 (esophagus 3)	6 (2)
Bone	–	3 (0.8)
Ureter	–	2 (0.5)
Hepatobiliary	–	2 (0.5)
Other	5 (glomangiosarcoma 1, melanoma 1, lymphoma 2, seminal vesicle 1)	11 (3)
<b>Total</b>	<b>29</b>	<b>394</b>

<sup>a</sup>An extensive search by Zheng and colleagues in August 2008 revealed 22 total cases of penile metastases from lung.<sup>26</sup>

GI, gastrointestinal.

believed to be due to neoplastic invasions into the cavernous sinuses and venous system, causing a complete blockage and a consequent unrelenting erection. Other low-flow mechanisms include venous stasis and/or thrombosis with possible nervous system disturbances. In a case of metastatic bladder cancer presenting with malignant priapism in 1998, Dubocq and colleagues described the possibility of priapism secondary to high flow in the cavernosal arteries with reversal of flow during diastole. Dubocq also described Doppler ultrasound and blood gases as confirmatory studies in the distinction of the two types of priapism. For all malignant priapisms, however, corporal biopsies are considered the most direct method of evaluating

the underlying cause and the primary site of neoplasm.<sup>1</sup>

As in our patient, prostate cancer is among the most common primary

*In one case report, a near 100% mortality rate was described. The longest reported cases of survival have been 7 and 9 years. In the 29 cases we reviewed in the present report, a majority of the patients (11/18) with follow-up data died within 6 months.*

malignancies to metastasize to the penis, usually via venous spread, lymphatic invasion, and direct extension.<sup>5</sup> Venous spread remains the most likely mechanism of metastasis and is explained by the rich communication between the dorsal penile venous system and the pelvic organs. Reversal of flow due to neoplastic invasion or compression can further

facilitate the process. Lymphatic spread is thought to occur in a similar fashion. Direct extension is generally observed in rigorously invasive tumors originating in sites of close approximation to the penis, including prostate, bladder, and rectum. The possibility of arterial spread has been proposed as well.<sup>3</sup>

Regardless of mechanism of spread or site of primary cancer, the prognosis of secondary penile malignancies is generally poor. It is reported that the average survival of such patients is approximately 9 months, with an overall survival of less than 18 months.<sup>4-6</sup> In one case report, a near 100% mortality rate was described.<sup>7</sup> The longest reported cases of survival have been 7 and 9 years.<sup>4</sup> In the 29 cases we reviewed in the present report, a majority of the patients (11/18) with follow-up data died within 6 months.<sup>8-35</sup> The longest survival time was 30 months for a patient with large B-cell lymphoma.<sup>31</sup> Treatment of secondary penile lesions with malignant priapism has generally been aimed at palliation and improved quality of life, including surgical management of priapism and a possibility of penectomy for cutaneous lesions, urinary symptoms, and pain.<sup>1-7</sup>

## Conclusions

Penile metastasis of cancers from other primary sites is an extremely rare phenomenon and only infrequently does it present itself as malignant priapism. Literature review reveals approximately 400 published cases of secondary penile malignancies, one-third of which are of prostatic origin. It has been reported

Table 2  
Cases of Penile Metastases Discussed in Published Reports Since September 2006<sup>3</sup>

Primary Site	Investigator	Histopathology	Initial Symptoms	Priapism	Survival (mo)
Prostate	Rohan V et al (2009) <sup>8</sup>	Prostate adenocarcinoma	Inguinal lymphadenopathy	-	> 14
	Cai T et al (2007) <sup>9</sup>	Prostate adenocarcinoma	Painful erythematous glans nodules	-	20
	Cortés González JR et al (2006) <sup>10</sup>	Prostate adenocarcinoma	Painless penile nodules	-	
Bladder	Eguiluz Lumbreras P et al (2009) <sup>11</sup>	Transition cell carcinoma	Hematuria	+	> 4
	Santos Gda C et al (2009) <sup>12</sup>	Transition cell carcinoma	Palpable penile nodule	-	> 10
	Hadzi-Djokić J et al (2009) <sup>13</sup>	Transition cell carcinoma		-	6
	Barresi V et al (2009) <sup>14</sup>	Microcystic urothelial carcinoma		-	6
	Sari A et al (2007) <sup>15</sup>	Microcystic urothelial carcinoma	Hematuria, glans ulceration	-	6
	Celma Domènech A et al (2009) <sup>16</sup>	Transition cell carcinoma	Priapism	+	
Rectum	Park JC et al (2009) <sup>17</sup>	Rectum adenocarcinoma	Priapism, penile nodules	+	
	Küronya Z et al (2009) <sup>18</sup>	Rectum adenocarcinoma		-	> 6
	Chung TS et al (2008) <sup>19</sup>	Rectum adenocarcinoma	Penile nodules	-	> 2
	Murhekar KM et al (2007) <sup>20</sup>	Rectum adenocarcinoma	Phymosis, indurated glans lesions	-	
	Ketata S et al (2007) <sup>21</sup>	Rectum adenocarcinoma		-	
	Añibarro Laca E et al (2006) <sup>22</sup>	Rectum adenocarcinoma	Painful penile swelling	-	
Lower GI	Ozawa H et al (2009) <sup>23</sup>	Cecum adenocarcinoma	Penile pain	-	26
Testis	Jiang H et al (2009) <sup>24</sup>	Testis mixed germ cell tumor	Priapism	+	10
Lung	Halliloglu AH et al (2009) <sup>25</sup>	Lung malignant epithelial tumor	Erectile dysfunction, palpable nodule	-	
	Zheng FF et al (2009) <sup>26</sup>	Lung adenocarcinoma	Perineal and penile swelling, glans ulcer	-	2
	Sofikerim M et al (2007) <sup>27</sup>	Lung epidermoid carcinoma	Painful erections, penile nodule, difficulty voiding	-	
Esophagus	López-Aramburu MA et al (2009) <sup>28</sup>	Esophagus tumor thrombosis	Painful necrotic skin over penis	-	3
	Pai A et al (2008) <sup>29</sup>	Esophagus squamous carcinoma	Painful perineal and penile nodules	-	> 6
Lymphoma	Numakura K et al (2008) <sup>30</sup>	Esophagus squamous carcinoma	Penile pain, penile nodules, dysuria	-	3
	Gallardo F et al (2009) <sup>31</sup>	Large B-cell lymphoma	Penile nodules, paraphimosis, glans swelling	-	> 30
	Lan SK et al (2008) <sup>32</sup>	Nasal NK/T-cell lymphoma	Painful penile nodule	-	> 4
Glomangiosarcoma	Masson-Lecomte A et al (2009) <sup>33</sup>	Pulmonary and cardiac glomangiosarcoma	Priapism	+	> 10
Seminal vesicle	Thyavilally YB et al (2007) <sup>34</sup>	Mucin secreting papillary adenocarcinoma	Acute urinary retention, painful penile swelling	-	6
Melanoma	Okinami T et al (2009) <sup>35</sup>	Malignant melanoma	Priapism, dysuria	+	

GI, gastrointestinal; NK, natural killer.

that 20% to 50% of penile metastases present with priapism. Malignant priapism can be distinguished between high flow or low flow via Doppler ultrasound, and different mechanisms of metastases to the penis have been proposed. However, regardless of mechanism of spread, the prognoses for secondary penile malignancies are grim, with the majority of patients surviving less than 18 months. ■

## References

- Dubocq FM, Tefilli MV, Grignon DJ, et al. High flow malignant priapism with isolated metastasis to the corpora cavernosa. *Urology*. 1998;51:324-326.
- Chan PTK, Bégin LR, Arnold D, et al. Priapism secondary to penile metastasis: a report of two cases and a review of the literature. *J Surg Oncol*. 1998;68:51-59.
- Cherian J, Rajan S, Thwaini A, et al. Secondary penile tumours revisited. *Int Semin Surg Oncol*. 2006;3:33.
- Cardoso Guimarães G, Rodrigues De Souza R, Paiva Gadêlha Guimarães A, et al. Penile metastasis of chondrosarcoma of the jaw. *Urology*. 2003;61:837.
- Philip J, Mathew J. Penile metastasis of prostatic adenocarcinoma: report of two cases and review of literature. *World J Surg Oncol*. 2003;1:16.
- Appu S, Lawrentschuk N, Russell JM, Bright NF. Metachronous metastasis to the penis from carcinoma of the rectum. *Int J Urol*. 2006;13:659-661.
- Hettiarachchi JA, Johnson GB, Panageas E, et al. Malignant priapism associated with metastatic urethral carcinoma. *Urol Int*. 2001;66:114-116.
- Rohan V, Hanji A, Patel J, et al. Penile metastases from prostate cancer. *Urol J*. 2009;6:217-219.
- Cai T, Salvadori A, Nesi G, et al. Penile metastasis from a T1b prostate carcinoma. *Onkologie*. 2007;30:249-252.
- Cortés González JR, Garza R, Martínez R, Gómez L. Prostate adenocarcinoma metastatic to penis. [Article in Spanish] *Actas Urol Esp*. 2006;30:832-834.
- Eguiluz Lumbreras P, Palacios Hernández A, Heredero Zorzo O, et al. Malignant priapism and secondary bladder cancer. [Article in Spanish] *Arch Esp Urol*. 2009;62:239-242.
- Santos Gda C, de Alvarenga ML, Borlot VF, et al. Penile metastasis of urothelial carcinoma diagnosed by fine-needle aspiration. *Cytojournal*. 2009;6:10.
- Hadzi-Djokić J, Pejčić T, Acimović M, et al. Penile metastasis from invasive bladder cancer. *Acta Chir Jugosl*. 2009;56:101-103.
- Barresi V, Ieni A, Magno C, Barresi G. High-grade urothelial carcinoma of the urinary bladder showing acquisition of microcystic histology in the penile metastasis: histogenetic considerations. *Pathol Res Pract*. 2009;205:568-571.
- Sari A, Uyaroglu MA, Ermete M, et al. Microcystic urothelial carcinoma of the urinary bladder metastatic to the penis. *Pathol Oncol Res*. 2007;13:170-173.
- Celma Domènech A, Planas Morin J, de Torres Ramírez I, et al. Priapism secondary to penis infiltration of bladder cancer. [Article in Spanish] *Actas Urol Esp*. 2009;33:327-329.
- Park JC, Lee WH, Kang MK, Park SY. Priapism secondary to penile metastasis of rectal cancer. *World J Gastroenterol*. 2009;15:4209-4211.
- Küronya Z, Bodrogi I, Lövey J, et al. Metachronous metastasis to the penis from carcinoma of the rectum—case report. [Article in Hungarian] *Magy Onkol*. 2009;53:263-266.
- Chung TS, Chang HJ, Kim DY, et al. Synchronous penile metastasis from a rectal carcinoma. *Int J Colorectal Dis*. 2008;23:333-334.
- Murhekar KM, Majhi U, Mahajan V, Satheesan B. Penile metastasis from rectal carcinoma. *Indian J Cancer*. 2007;44:155-156.
- Ketata S, Boulaire JL, Soulimane B, Bargain A. Metachronous metastasis to the penis from a rectal adenocarcinoma. *Clin Colorectal Cancer*. 2007;6:657-659.
- Añibarro Laca E, Pérez-Irezabal Pindado JC, Ibáñez Calle T, Llárena Ibaguren R. Metastases from a rectal adenocarcinoma to the prepuce. [Article in Spanish] *Arch Esp Urol*. 2006;59:737-739.
- Ozawa H, Muramoto M, Watanabe M. Metastasis to the penis from cecum carcinoma. *Int J Urol*. 2009;16:770.
- Jiang H, Zhu XW, Shi SF, et al. Malignant priapism secondary to testicular tumor. *Chin Med J (Engl)*. 2009;122:1839-1840.
- Haliloglu AH, Haliloglu N, Akpınar EE, Ataoglu O. Erectile dysfunction: initial symptom of a patient with lung cancer [published online ahead of print August 11, 2001]. *J Sex Med*. doi:10.1111/j.1743-6109.2009.01431.x
- Zheng FF, Zhang ZY, Dai YP, et al. Metastasis to the penis in a patient with adenocarcinoma of lung, case report and literature review. *Med Oncol*. 2009;26:228-232.
- Sofikerim M, Gülmez I, Tokat F, et al. Epidermoid carcinoma of the lung with isolated penile metastasis. *Can J Urol*. 2007;14:3643-3645.
- López-Aramburu MA, Viguri Díaz A, Rosa Arias J, Peña Pérez P. Penile metastasis like first sign of esophagus carcinoma. [Article in Spanish] *Actas Urol Esp*. 2009;33:318-320.
- Pai A, Sonawane S, Purandare NC, et al. Penile metastasis from esophageal squamous carcinoma after curative resection. *Ann Thorac Cardiovasc Surg*. 2008;14:238-241.
- Numakura K, Tadachi K, Shimoda J. A case of metastatic tumor of penis from esophageal carcinoma. [Article in Japanese] *Hinyokika Kyo*. 2008;54:795-797.
- Gallardo F, Pujol RM, Barranco C, Salar A. Progressive painless swelling of glans penis: uncommon clinical manifestation of systemic non-Hodgkin's lymphoma. *Urology*. 2009;73(4):929.e3-e5.
- Lan SK, Lin CW, Ho HC, et al. Penile metastasis secondary to nasal NK/T-cell lymphoma. *Urology*. 2008;72:1014-1015.
- Masson-Lecomte A, Rocher L, Ferlicot S, et al. High-flow priapism due to a malignant glomus tumor (glomangiosarcoma) of the corpus cavernosum [published online ahead of print November 13, 2009]. *J Sex Med*. doi:10.1111/j.1743-6109.2009.01577.x
- Thyavhally YB, Tongaonkar HB, Gupta S, Gujral S. Primary seminal vesicle adenocarcinoma presenting as isolated metastasis to penis responding to chemotherapy and hormonal therapy. *Urology*. 2007;69(4):778.e1-e3.
- Okinami T, Ishitoya S, Imamura M, et al. A case of penile metastasis of malignant melanoma with priapism. [Article in Japanese] *Hinyokika Kyo*. 2009;55:149-152.

## Main Points

- Described here is a patient with metastatic prostate adenocarcinoma presenting with painful priapism. Literature review reveals approximately 400 published cases of secondary penile malignancies, one-third of which are of prostatic origin.
- Clinical manifestations of penile metastases include penile masses or nodules, ulceration, obstructive or irritative urinary symptoms, hematuria, and malignant priapism in 20% to 50% of the documented cases.
- Malignant priapism can be distinguished between high flow or low flow via Doppler ultrasound, and different mechanisms of metastases to the penis have been proposed. Most incidences are considered to be low flow and are believed to be due to neoplastic invasions into the cavernous sinuses and venous system, causing a complete blockage and a consequent unrelenting erection.
- Regardless of mechanism of spread or site of primary cancer, the prognosis of secondary penile malignancies is poor. The average survival is approximately 9 months with an overall survival of less than 18 months.