

Prostate Brachytherapy Seed Migration To The Ischial Bone: 2 Case Reports

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Citation

A Sugawara, N Shigematsu, M Oya, J Nakashima, E Kunieda. *Prostate Brachytherapy Seed Migration To The Ischial Bone: 2 Case Reports*. The Internet Journal of Urology. 2009 Volume 7 Number 2.

Abstract

We report two cases of seed migration to the ischial bone after prostate brachytherapy. A 78-year-old male and a 66-year-old male underwent transperineal interstitial permanent prostate brachytherapy with loose ^{125}I seeds. Postimplant pelvic radiographs revealed a seed that was overlapped by the right ischial bone. Postimplant pelvic computed tomography revealed a seed that migrated to the right ischial bone. The two cases had no symptoms related to the migrated seed. This is the first report of seed migration to the ischial bone after transperineal interstitial permanent prostate brachytherapy. For these two cases, it is hypothesized that the seeds migrated to the ischial bone via the pelvic venous pathway, not via the systemic circulation.

INTRODUCTION

Seed migration is a recognized event in prostate brachytherapy. Rare cases of seed migration to coronary artery, the right ventricle, and the vertebral venous plexus have been reported [1-3]. However, no cases of seed migration to the ischial bone have been reported. Here, we report two cases of seed migration to the ischial bone.

CASE REPORTS

CASE 1

A 78-year-old man with T2aN0M0 (AJCC TNM classification, 2002) prostate cancer with a Gleason score of 6 (3+3) and a prostate-specific antigen (PSA) level of 13.05 ng/mL underwent prostate brachytherapy with loose ^{125}I seeds using a Mick applicator (Mick Radio-Nuclear Instruments, Bronx, NY). The prescribed dose was 145 Gy. The preimplant prostate volume by transrectal ultrasound (TRUS) was 24.5 cc. The ^{125}I source strength was 12.07MBq per source. The number of seeds implanted was 80.

Immediately after seed implantation, a pelvic radiograph showed no migrated seeds. Eighteen days after seed implantation, a pelvic radiograph showed a seed that had migrated to the pelvic area and was overlapped by the right ischial bone (Fig. 1). Seven weeks after seed implantation, postimplant pelvic computed tomography (CT) showed a seed that migrated to the right ischial bone (Fig. 2).

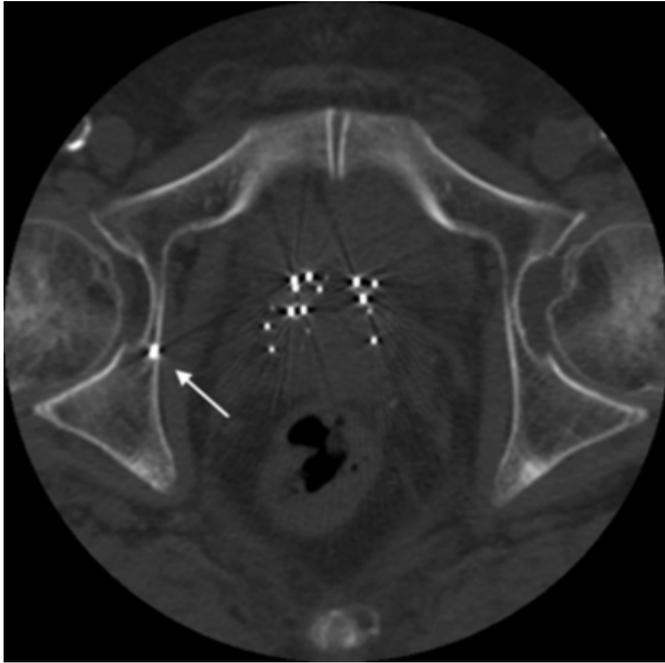
Figure 1

Figure 1. Case 1: Pelvic radiograph showing a seed that has migrated to the pelvic area and is overlapped by the right ischial bone (arrow).



Figure 2

Figure 2. Case 1: Pelvic computed tomography scan showing seed migration to the right ischial bone (arrow).



CASE 2

A 66-year-old man with T1cN0M0 prostate cancer with a Gleason score of 6 (3+3) and a PSA level of 4.79 ng/mL underwent prostate brachytherapy with loose ¹²⁵I seeds. The preimplant prostate volume by TRUS was 26.3 cc. The ¹²⁵I source strength was 12.07MBq per source. The number of seeds implanted was 79.

Immediately after seed implantation, a pelvic radiograph showed no migrated seeds. One day after seed implantation, a pelvic radiograph showed a seed that had migrated to the pelvic area and was overlapped by the right ischial bone (Fig. 3). Three months after seed implantation, postimplant pelvic CT showed a seed that migrated to the right ischial bone (Fig 4).

The two patients had no symptoms related to the migrated seed, and they were informed of the migration.

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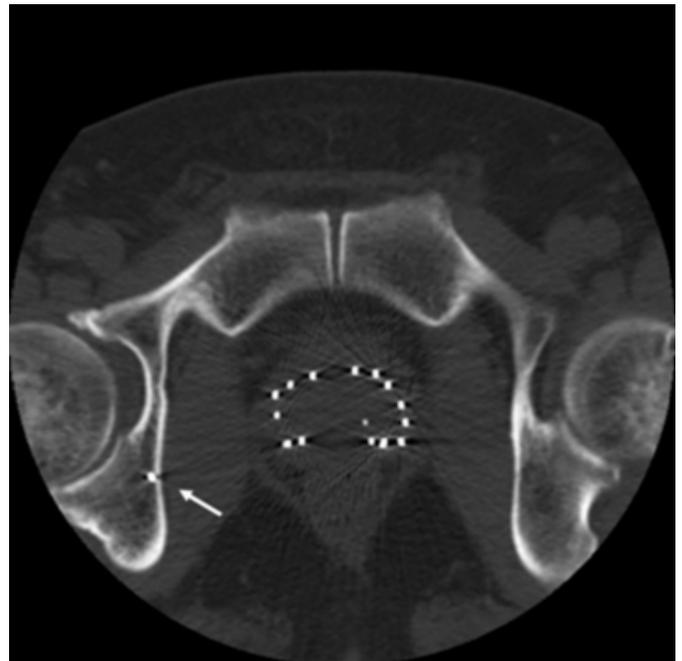
Figure 3

Figure 3. Case 2: Pelvic radiograph showing a seed that has migrated to the pelvic area and is overlapped by the right ischial bone (arrow).



Figure 4

Figure 4. Case 2: Pelvic computed tomography scan showing seed migration to the right ischial bone (arrow).



DISCUSSION

The present cases represent the first reports of seed migration to the ischial bone. A possible mechanism of seed migration to the ischial bone is that seeds might enter the periprostatic vessels, and might migrate directly to the ischial bone via the pelvic venous plexus. This hypothesis is supported by the following report [4]. In 1940, Batson

reported the interconnectivity of the periprostatic vessels with the pelvic venous plexus, pelvic bones, sacral canal, and vertebral venous plexus [4]. The Batson's plexus is valveless, and many reversals of flow are said to occur with changes in venous pressure secondary to changes in body posture and Valsalva manoeuvres [4]. The rich venous plexus of Batson is implicated as the route of hematogenous dissemination of prostate adenocarcinoma to the pelvic bones, femur, spine, and ribs.

CONCLUSION

The present cases are the first reports of seed migration to the ischial bone. For these two cases, it is hypothesized that the seeds migrated to the ischial bone via the pelvic venous

pathway, not via the systemic circulation.

References

1. Davis BJ, Bresnahan JF, Stafford SL, Karon BL, King BF, Wilson TM: Prostate brachytherapy seed migration to a coronary artery found during angiography. *J Urol*; 2002; 168:1103.
2. Davis BJ, Pfeifer EA, Wilson TM, King BF, Eshleman JS, Pisansky TM: Prostate brachytherapy seed migration to the right ventricle found at autopsy following acute cardiac dysrhythmia. *J Urol*; 2000; 164:1661.
3. Nakano M, Uno H, Gotoh T, Kubota Y, Ishihara S, Deguchi T, Hayashi S, Matsuo M, Tanaka O, Hoshi H: Migration of prostate brachytherapy seeds to the vertebral venous plexus. *Brachytherapy*; 2006; 5:127-130.
4. Batson OV: The Function of the Vertebral Veins and Their Role in the Spread of Metastases. *Ann Surg*; 1940; 112:138-149.

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