Transperineal Placement of Biodegradeable Material (SpaceOAR) for Prostate Cancer

Number: 0926

Policy
*Please see amendment for Pennsylvania Medicaid at the end of this CPB.

Aetna considers transperineal periprostatic placement of biodegradable material (SpaceOAR) medically necessary for reducing rectal toxicity in men undergoing radiotherapy for prostate cancer.

Aetna considers transperineal periprostatic placement of biodegradable material experimental and investigational for all other indications.

Background
SpaceOAR is a biodegradable polyethylene glycol hydrogel that is injected as a liquid between the prostate and rectum under...
ultrasound guidance. Once injected, the liquid solidifies within seconds into a hydrogel that pushes the anterior rectal wall away from the prostate. The goal of this implantation is to separate the rectum from the prostate to decrease rectal exposure during radiation treatment for prostate cancer. SpaceOAR is completely resorbed by the body over time.

Mok et al (2014) stated that dose-escalated radiation therapy for localized prostate cancer improves disease control but is also associated with worse rectal toxicity. A spacer placed between the prostate and rectum can be used to displace the anterior rectal wall outside of the high-dose radiation regions and potentially minimize radiation-induced rectal toxicity.

Zilli et al (2014) noted that in the curative radiotherapy of localized prostate cancer, improvements in biochemical control observed with dose escalation have been counterbalanced by an increase in radiation-induced toxicity. The injection of biodegradable spacers between prostate and rectum represents a new frontier in the optimization of radiotherapy treatments for patients with localized disease. Transperineal injection of different types of spacers under transrectal ultrasound guidance allows creating a 7- to 20-mm additional space between the prostate and the anterior rectal wall lasting 3 to 12 months. Dosimetrically, a relative reduction in the rectal volume receiving at least 70 Gy (V70) in the order of 43% to 84% was observed with all types of spacers, regardless of the radiotherapy technique used. Preliminary clinical results showed for all spacers a good tolerance and a possible reduction in the acute side effects rate.

The primary evidence for the SpaceOAR is a randomized controlled trial (n = 222) that found a significant reduction in late (3 to 15 months) rectal toxicity severity in the SpaceOAR spacer group (P = 0.04), with a 2.0% and 7.0% late rectal toxicity incidence in the spacer and control groups, respectively (Mariados, et al., 2015). The study found similar rates of acute toxicity between groups with or without the SpaceOar.

An Interventional Procedures Technology Assessment by the National Institute for Health and Clinical Excellence (NICE, 2017) found "[c]urrent evidence on the safety and efficacy of insertion of a biodegradable spacer to reduce rectal toxicity during radiotherapy for prostate cancer is adequate to support the use of this procedure provided that standard arrangements are in place for clinical governance, consent and audit."

van Gysen and colleagues (2014) examined the feasibility of injecting a temporary spacer between the rectum and the prostate and quantified the degree of rectal dosimetric improvement that might result. A total of 10 patients underwent CT and MRI before and after injection of 10 cc of hydrogel and at completion of radiotherapy. Hydrogel was injected under general anesthetic using a transperineal approach. The primary end-points were peri-operative toxicity and rectal dosimetry (V80, V75, V70, V65, V40 and V30). Secondary end-points were acute gastro-intestinal (GI) toxicity during and 3 months following radiotherapy and the stability of the hydrogel. Treatment for all patients was planned incorporating volumetric modulated arc therapy with a D95 of 80 Gy in 40 fractions to the prostate and proximal seminal vesicles on both the pre- and post-hydrogel scans. Toxicity was scored with the Common Terminology Criteria, v. 3.0. In the first 24 hour, 2 patients described an increase in bowel movement frequency. The comparison plans had identical prescription doses. Rectal doses were significantly lower for all hydrogel patients for all dose endpoints (V80 = 7 % versus 0.1 %, V75 = 10.3 % versus 1.1 %, V70 = 13.2 % versus 2.7 %, V65 = 15.8 % versus 4.6 %, V40 = 35.2 % versus 23.3 %, V30 = 52.6 %
versus 38.5 %; p < 0.001). Post-treatment MRI showed gel stability. Grade 1 bowel toxicity was reported in 6 patients during radiotherapy and 2 patients at 3 months' follow-up. No Grade 2 or Grade 3 acute bowel toxicity was reported. The authors concluded that SpaceOAR hydrogel was successfully injected in 10 patients with minimal side effects. Rectal dosimetry was significantly improved in all patients. This study has been extended to 30 patients with longer follow-up planned. (This was a small (n = 10) feasibility study).

Pinkawa and colleagues (2015) stated that in contrast to primary radiotherapy, no reports are available for a hydrogel spacer application in post-operative salvage radiotherapy for prostate cancer. These researchers presented the case of a 77-year old patient who presented 20 years after radical prostatectomy with a digitally palpable local recurrence at the urethrovesical anastomosis (PSA 5.5 ng/ml). The hydrogel spacer (10 ml, SpaceOAR™) was injected between the local recurrence and rectal wall under transrectal ultrasound guidance. Treatment planning was performed with an IMRT up to a total dose of 76 Gy in 2-Gy fractions. The same planning was performed based on computed tomography before spacer injection for comparison. The local recurrence, initially directly on the rectal wall, could be displaced more than 1 cm from the rectal wall after hydrogel injection. With a mean total dose of 76 Gy to the planning target volume, rectal wall volumes included in the 70 Gy, 60 Gy, 50 Gy isodoses were 0 cm(3), 0 cm(3), and 0.4 cm(3) with a spacer and 2.9 cm(3), 4.5 cm(3), and 6.2 cm(3) without a spacer, respectively. The patient reported rectal urgency during radiotherapy, completely resolving after the end of treatment. The PSA level was 5.4 ng/ml a week before the end of radiotherapy and dropped to 0.9 ng/ml 5 months after radiotherapy. The authors concluded that the hydrogel spacer was successfully applied for dose-escalated radiotherapy in a patient with macroscopic local prostate cancer recurrence at the urethrovesical anastomosis to decrease the dose at the rectal wall. This option can be considered in specifically selected patients.
Klotz et al (2013) stated that radiotherapy is an appropriate primary therapy for localized prostate cancer in accordance with urological guidelines. Especially in tumors of higher grade malignancy, dose escalation up to 80,0 Gy seems to be an advantage; however rectum toxicity can be a problem. By injecting a synthetic hydrogel (SpaceOAR) as a spacer between the prostate and rectum, rectal toxicity can be reduced. These investigators reported on their experiences with 47 patients and an average follow-up of 241 days. From February 2012 to November 2012, 47 patients were included in the study series. Before external radiotherapy the hydrogel was injected between prostate and rectum in the so-called Denovier space. This inter-disciplinary procedure was carried out with the patient under general anesthesia using transrectal ultrasound guidance and video documentation. The patients were hospitalized for 1 day. The exact position of the gel was assessed by means of magnetic resonance imaging (MRI). Radiotherapy was initiated 7 to 14 days after gel application in a dose escalation manner by means of intensity modulated radiation therapy (IMRT) up to a dose of 80,0 Gy. Average follow-up was 241 (100 to 386, SD 91) days. No early side effects specific for the application were observed. The achieved distance between rectum and the mid-plane of the prostate gland was on average 13.8 (6 to 24, SD = 3.8) mm. Calculated V70 (rectal volume irradiated with 70.0 Gy or more) could be reduced to an average of 1.5 (0 to 8, SD = 1.7) %. One patient showed an asymptomatic lesion of the rectal mucosa after irradiation with 38,0 Gy. This lesion was closely controlled and gel penetration was found. As a result radiotherapy was discontinued. Without further treatment the necrosis had completely healed 3 months later. The authors concluded that hydrogel application between prostate and rectum allowed dose escalation up to 80,0 Gy and appeared to reduce morbidity in patients with localized prostate cancer receiving radiotherapy. However, they stated that before final judgment of the new technique further studies must follow.

Mariados et al (2015) reported on a prospective multicenter randomized controlled pivotal trial to assess outcomes
following absorbable spacer (SpaceOAR system) implantation. Overall, 222 patients with clinical stage T1 or T2 prostate cancer underwent computed tomography (CT) and magnetic resonance imaging (MRI) scans for treatment planning, followed with fiducial marker placement, and were randomized to receive spacer injection or no injection (control). Patients received postprocedure CT and MRI planning scans and underwent image guided intensity modulated radiation therapy (79.2 Gy in 1.8-Gy fractions). Spacer safety and impact on rectal irradiation, toxicity, and quality of life were assessed throughout 15 months. Spacer application was rated as "easy" or "very easy" 98.7% of the time, with a 99% hydrogel placement success rate. Perirectal spaces were 12.6 ± 3.9 mm and 1.6 ± 2.0 mm in the spacer and control groups, respectively. There were no device-related adverse events, rectal perforations, serious bleeding, or infections within either group. Pre-to postspacer plans had a significant reduction in mean rectal V70 (12.4% to 3.3%, P<.0001). Overall acute rectal adverse event rates were similar between groups, with fewer spacer patients experiencing rectal pain (P=.02). A significant reduction in late (3-15 months) rectal toxicity severity in the spacer group was observed (P=.04), with a 2.0% and 7.0% late rectal toxicity incidence in the spacer and control groups, respectively. There was no late rectal toxicity greater than grade 1 in the spacer group. At 15 months 11.6% and 21.4% of spacer and control patients, respectively, experienced 10-point declines in bowel quality of life. MRI scans at 12 months verified spacer absorption. The investigators concluded that spacer application was well tolerated. Increased perirectal space reduced rectal irradiation, reduced rectal toxicity severity, and decreased rates of patients experiencing declines in bowel quality of life. The investigators stated that the spacer appears to be an effective tool, potentially enabling advanced prostate RT protocols.

Whalley et al (2014) reported on a phase I/II study of an absorbable spacer (SpaceOAR) in 30 patients with prostate cancer. All patients underwent magnetic resonance imaging before and after placement of 10 cm(3) of hydrogel. The first 10
patients had an additional magnetic resonance imaging after the completion of radiation treatment. SpaceOAR hydrogel was injected under general anaesthetic using a transperineal approach with transrectal ultrasound guidance. Primary end points were perioperative toxicity and comparison of rectal dosimetry. Secondary end points included acute and late radiation toxicity. All patients were planned on both pre- and post-hydrogel scans to a D95 of 80 Gy in 40 fractions. A contemporary control group of 110 prostate cancer patients treated with the same prescription was identified for comparison. The investigators reported that there were no perioperative complications. Rectal doses were significantly lower for the post-hydrogel plans, especially above 65 Gy (V82 = 0.2% versus 1.3%; V80 = 0.8% versus 5.3%; V75 = 2.2% versus 9.5%; V70 = 3.7% versus 12.3%; V65 = 5.4% versus 14.7%; V40 = 22.9% versus 32% and V30 = 42.7% versus 49.4%). There was no significant difference in acute grade 1 and 2 gastrointestinal toxicity, which was 43% versus 51% and 0% versus 4.5% in the hydrogel and control groups, respectively. Late grade 1 was significantly less frequent in the hydrogel group (16.6% versus 41.8%, P = 0.04). The investigators concluded that SpaceOAR hydrogel was inserted with minimal side-effects. Dosimetric benefits were greatest at higher rectal doses (V65 to V82). Late grade 1 gastrointestinal toxicity was significantly lower than that seen in patients treated without hydrogel.

The above policy is based on the following references:


13. Hutchinson RC, Sundaram V, Folkert M, Lotan Y. Decision


AETNA BETTER HEALTH® OF PENNSYLVANIA

Amendment to
Aetna Clinical Policy Bulletin Number: 0926 Transperineal Placement of Biodegradeable Material (SpaceOAR) for Prostate Cancer

There are no amendments for Medicaid.

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