How to Preserve Fertility After Prostate Cancer Diagnosis

Prostate cancer is the most common cancer in men, 1 in 6 men in the US. Treatment of prostate cancer can markedly reduce fertility potential. It is expected that 217,000 men were diagnosed with prostate cancer in the US in 2010. Screening for prostate cancer using a blood test—prostate specific antigen (PSA) resulted in increased diagnosis in younger men. Many men diagnosed with prostate cancer are interested in future fertility. Prostate cancer is diagnosed in 1 in 10,000 men before the age of 39 and 1 in 40 between the ages of 40 and 59. Except in cases of distant spread, survival after prostate cancer approaches 100%. Prostate cancer is more common in men carrying BRCA2 mutations and occurs in younger age. Cancer in men may affect sperm count and quality, although this is controversial. In general, 10% of men diagnosed with cancer are expected to have no ejaculated sperm—azoospermia. Up to 50% may have abnormal sperm quality.

Effects of prostate cancer treatment on future fertility in men

Treatment options for prostate cancer include:

1. Radical prostatectomy. This procedure can be performed through a large incision or via minimally access surgery. Surgery can be modified to preserve the nerve fibers responsible for erection thus reducing erectile dysfunction after surgery. Surgery causes block of the vas deferens and ejaculatory ducts; the ducts that
convey sperm out of the testes, leading to obstruction and azospermia.

2. Radiation. External beam radiation affect sperm production from the testes as scattered radiation can damage the sperm producing cells. Placing a radioactive seed inside the prostate – brachytherapy, has minimal effect on sperm production.

3. Observation only is possible for selected men diagnosed with prostate cancer.

**Options for fertility preservation in prostate cancer**

1. **Sperm Cyopreservation.** Less than 50% of men diagnosed with cancer preserve their sperm before treatment due to lack of information or counseling. This is a very available and low cost option. One or more samples can be frozen depending on time and initial sperm counts and quality. Sperm can be frozen indefinitely. If multiple samples were frozen, they can be used for intrauterine insemination. If limited amount of sperm is available or low quality - movement or sperm shape, IVF with injection of sperm into the egg-ICSI is required. **Sperm freezing has a good psychological impact on men during cancer treatment.**

2. **Electroejaculation.** For men who have erectile dysfunction or inability to ejaculate after surgery, electrical stimulation can induce ejaculation. Sperm quality in this case is likely abnormal favoring the use of sperm for IVF-ICSI.

3. **Testicular Sperm Extraction-TESE.** Form men with no ejaculated sperm – azospermia, sperm can be surgically obtained from the testes. This is also an option for men who cannot produce sperm and no sperm could be aspirated without surgery. This procedure can be performed during the surgical treatment for cancer. Sperm are obtained in 60% of men with azospermia. Sperm obtained are used for
IVF with ICSI. Sperm can also be obtained from the duct that convey sperm outside the testes—Microsurgical epididymal sperm aspiration—MESA. The success rate of achieving pregnancy using frozen ejaculated sperm or surgically obtained viable sperm is not different from fresh sperm. This is also an option for reproduction in men who did not freeze sperm before surgery.

**Checklist for fertility preservation in prostate cancer**

- Discuss with your oncologist different cancer treatment options—radical prostatectomy, external beam radiation and brachytherapy or even observation only.
- If radical prostatectomy is planned inquire about the technique of surgery—open or laparoscopy, nerve sparing procedures and incidence of erectile dysfunction in the surgeon’s hands.
- Ask for more information about the effects of prostate cancer treatment and fertility preservation options from the oncologist or reproductive endocrinologist.
- If interested in fertility preservation a reproductive endocrinologist or urologist can refer you for semen analysis and freezing (in the same time), interpret the semen analysis and advice about the number of samples to be frozen.
- If no sperm found—azoospermia, surgical sperm retrieval can be performed at the time of surgery for cancer.