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Fertility Sparing Cervical Cancer Treatment

Author: Glory Wilson
Major: Biology-Allied Health
Department of Microbiology and Molecular Genetics, Oklahoma State University, Stillwater, OK 74078, USA

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Abstract

As cervical cancer survival rates climb higher than ever before, doctors are beginning to shift their focus in a new direction. Fertility sparing treatments are important to many battling cervical cancer since so many patients are diagnosed during the prime of their childbearing years. Doctors have seen success in a few different treatment paths. Ovarian Transposition moves the patients' ovaries out of the field of radiation to preserve function. Although it has shown success in multiple trials, studies have noted an underutilization in comparison to other less successful treatments. Radical vaginal trachelectomies have begun to replace radical hysterectomies, while keeping the ovaries and uterus completely intact. This allows for natural births to be discussed by the patients and their doctors. Additional improvements have been made to advance radical vaginal trachelectomies with laparoscopic techniques and eventually robotic technology. These advances have resulted in quicker recovery times and reduced blood loss.

Introduction

Clearly when receiving a cancer diagnosis, a million worries flash through the mind of most patients. For cervical cancer diagnoses, young women often wonder how cancer, and the treatment that follows, will affect reproductive abilities. Given that a larger majority of those being treated for cervical cancer are still within their reproductive lifespan, it is important to many patients to preserve childbearing capabilities while also providing an effective treatment to eradicate cancer for the remainder of her lifetime. Although the primary job of oncologists is to provide life-saving treatment to effectively kill any cancerous cells within the body of their patients, cervical cancer treatment plans have proven to be reliable and effective over a multitude of people. For instance, the National Cancer Institute at the National Institutes of Health reports a ninety-two percent survival rate within five years of being diagnosed for those who receive an early cervical cancer diagnosis (National Institutes of Health, 2023). However, as the disease progresses the survival rate does fall quite rapidly. Even so, late-stage discoveries of cervical cancer are becoming less common because medical professionals are

working vigilantly to spread a newfound understanding of cancer screening methods to the general public. Due to this encouraging advancement, medical professionals have turned their focus in a new direction. Not only do they wish to continue treating patients with the goal of maintaining the already established high survival rates and low reoccurrence rates, but it is now more important than ever to preserve the quality of life after patients beat their cancer battle. Because of this, new treatment options are being visited. The goal is to find an effective way to treat cervical cancer while decreasing the risk of damaging ovarian tissue and surrounding organs that are necessary for a healthy gestational period. Below, there will be discussion about three promising surgical techniques that doctors are beginning to use to increase successful pregnancies following cervical cancer treatment. These procedures include ovarian transpositions (OTs), radical vaginal trachelectomies (RVTs), laparoscopic radical trachelectomies (LRTs), and robotic assisted radical trachelectomies (RRT).

Recent Progress

Ovarian transposition is used to maintain ovarian function for patients that require radiation to treat their cancer. Overall, OT is simple. Doctors are moving the ovaries out of the field of radiation to minimize damage, but this is easier said than done (Laios et al., 2021). It requires incredible cooperation from oncologists and surgeons to properly establish where the ovaries should be transposed to. After a decision is made, the surgeon should carefully consider the best approach for each patient. This includes placement as well as choosing if it should be approached laparoscopically or not. Obviously, laparoscopically is the least invasive approach and therefore the preferred method. Assuming this method is followed, the surgeon will transpose the ovaries and adhere them to this new location. It is pertinent that surgeons are mindful of the risk of torsion to supplying vessels as they move the ovaries. Additionally, patients should be informed of an increased risk for ovarian cysts after transposition. A meta-analysis of gynecological cancer patients shows that five to sixteen percent of patients who underwent OT developed benign ovarian cysts (Gubbala et al., 2014). However, these are only minor complications that most find to be well worth the risk if doctors can preserve fertility. A study done by a teaching university reports an eighty-eight percent success rate in maintaining gonadotropin levels (Arian et al., 2017). Unfortunately, it seems as if oncologists are unable to keep up with the rapidly advancing field. The University of Wisconsin compiled patient data for two hundred and sixteen women being treated with cervical cancer. Within this group, only twenty-nine percent of qualifying patients underwent OT, either laparoscopically or via the older laparotomy approach (Salih et al., 2015). Although it is not specified if patients refused the OT procedure or if medical personnel failed to inform individuals of OT, it is still worth noting the underutilization OT is facing despite its ability to improve treatments that are known to be successful.

In addition to OT, radical vaginal trachelectomies (RVTs), laparoscopic radical trachelectomies (LRTs), and robotic assisted radical trachelectomies (RRTs) have shown success in preserving fertility and childbearing abilities in cervical cancer patients. RVT has been developed by altering concepts of radical hysterectomies to become less invasive and more efficient in treating women with cervical cancer. Instead of removing the uterus, cervix, and a larger portion of the upper vagina like a radical hysterectomy, an RVT only removes

a portion of the cervix (Yan et al., 2016). A sixty-case study featured RVT surgeries paired with laparoscopic pelvic lymphadenectomy following neoadjuvant chemotherapy. All the patients in the trial had stage IB1 cervical cancer with tumors less than two centimeters in size (with an average size of thirteen millimeters), and they ranged in age from nineteen to thirty-eight. Of the sixty patients, fifty-five had squamous cell carcinoma and five had adenocarcinoma. Following the procedure, forty-two women in the trial tried to conceive. Within this group, thirty-six women had a live birth, either through intrauterine insemination, in vitro fertilization, or natural conception. LRTs and RRTs have utilized new technology to improve upon the success that doctors witnessed with RVT treatment. A case study comparing LRT patients with RRT patients showed similar results in treating cervical cancer patients while preserving fertility (Api et al., 2016). Upon examining the finer details of the study, differences between LRT and RRT is substantial. Scientists observed longer hospital stays following the LRT procedure. Additionally, patients experienced a higher blood volume loss on average. Finally, of the two hundred and sixteen patients who received LRT as treatment, thirteen had reoccurrences of cervical cancer. RRT saw no cases of reoccurrence out of the forty-five patients treated. This improvement validates doctor's efforts to improve fertility success following cervical cancer treatment.

Discussion

Today, pap smears are the gold standard of cervical cancer screening. When the National Cancer Institute examined the effectiveness, a system to measure its sensitivity was used to make a uniform system of measurement (National Institutes of Health, 2023). This includes weighing the accuracy of the test threshold, true-positive tests, and true-negative tests. Most pap smears have a sensitivity of seventy to eighty percent. However, this number can be greatly affected by how the sample is obtained. If inadequate training and techniques are used to collect a sample, sensitivity decreases. This makes it much more important to properly train medical professionals to properly perform pap smear testing. Because pap smear testing has been given the attention needed to make it as accurate as possible, doctors are able to detect most cervical cancer cases in early stages (typically in stage IIB or before), making it much easier to treat. Additionally, the early diagnoses make survival rates higher and reoccurrence rates lower. With these numbers consistently improving over recent decades, doctors are able to focus on improving quality of life following treatment. OT can aid patients that need radiation therapy maintain fertility. While RVT has been a massive breakthrough for patients that in the past would have received a radical hysterectomy. LVT utilized the proven principles of RVT and improved upon them to reduce negative side effects. RRT has continued these improvements by reducing blood loss and reoccurrence rates. Overall, these advancements have only been made possible because of the developments professionals have made to detect cervical cancer early and treat it effectively.

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