Laparoscopic Guided Interstitial Brachytherapy

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Introduction

Each year more than 3200 people are diagnosed with cervical cancer in the UK¹. External beam radiotherapy (EBRT) with concomitant cisplatin by imaged guided followed adaptive brachytherapy (IGABT) is the recommended treatment for locally advanced cervical cancer. IGABT using interstitial needles has been routine practice for treating locally advanced cervical cancer in the authors' department since 2016. The following case study describes an alternative method for interstitial brachytherapy insertion.





Interstitial needle placed in residual disease

References

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and sigmoid

Residual disease

Case Study

A 54 year old lady underwent a subtotal hysterectomy with conservation of the cervix and both ovaries in 2012. In 2019 she was diagnosed with stage IB1 mesonephric adenocarcinoma of the cervix and underwent radical trachelectomy, bilateral salpingo-oophorectomy and bilateral pelvic lymph node dissection as per current guidelines³. Her post-operative PET/CT imaging showed residual/recurrent disease superior to the vaginal vault. She was treated with 45Gy 25# EBRT with concomitant cisplatin. A week 5 MRI was performed with a vaginal vault applicator in situ. The residual disease was a 2cm lobulated nodule extending superiorly from the vaginal vault, in close proximity to the rectum and tethered to the sigmoid colon.

The patient had adhesions situated between the bowel surface and the vaginal vault as well as between the bowel and the left pelvic side wall. Routine practice within the authors' department is to use ultrasound guidance for interstitial insertions, however in this case ultrasound alone would have proved difficult to perform and interpret due to these adhesions.



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Proximity to rectum

IGABT in the authors' centre is carried out by two clinical oncology consultants, but for this case they were assisted by a gynaecological oncology surgeon and a surgical fellow. The surgeons performed a laparoscopy, separating the adhesions and mobilising the bowel, in order to visualise the residual disease. This allowed the clinical oncologists to place the interstitial needles through the vaginal vault into the disease. A total of 7 needles were inserted and the post insertion MRI and CT scans confirmed that the needles were within the residual disease and perforation of the rectum and sigmoid was avoided. The treatment plan achieved V100% was 94%, D90 = 89.63Gy EQD2 to the HR-CTV and dose tolerances to the OARs were not exceeded.





Results

The patient tolerated her treatment well and at her 3 month review reported no side effects apart from some intermittent constipation. The PET/CT at 3 months post

treatment showed no signs of residual disease.

Procedure

Conclusion

interstitial guided Laparoscopic brachytherapy enabled accurate placement of the interstitial needles, avoidance of bowel perforation and kept OAR doses within tolerance.

The intention is not to make this standard practice; however its success has meant that it will be considered in future challenging cases.