

BSGE TRAVELLING FELLOWSHIP REPORT – SABRINA BUTT ST5

THE VISIT

10-day fellowship at Wirral University Teaching Hospital from Monday 30th November until Friday 11th December 2020.

THE AIM

- To increase my experience of surgical management of advanced endometriosis; to observe excision of rectovaginal, uterovesical and deeply infiltrating disease.
- To increase my surgical exposure, including that of advanced laparoscopic surgical skills such as ureterolysis and complex adhesiolysis.
- To observe robotic gynaecological surgery and gain first-hand experience of da Vinci Robotic system.
- To gain a deeper understanding of the holistic management of patients suffering from endometriosis.

BACKGROUND

Wirral University Teaching Hospital (WUTH) is a tertiary referral centre in North West of UK for patients with deeply infiltrating endometriosis. It is a nationally accredited endometriosis centre, one of the original nine, with a dedicated gynaecology theatre hub, use of a 3D stack as standard and experienced gynaecology theatre team including a trained first assistant. Named endometriosis leads and advanced laparoscopic surgeons mean that all rectal endometriosis cases are referred to the small, expertly trained team with years of experience. It is dedicated to minimal access surgery with 99% hysterectomies performed laparoscopically, with use of a da Vinci Robotic System for gynaecological procedures since 2013. WUTH rightly has an excellent reputation for training: original centre for the previously national ATSM in advanced laparoscopic excision of benign disease; discourages double consultant operating to allow trainees adequate exposure and training in complex cases; dedicated laparoscopic simulation box training room with easily available access; highly motivated consultants dedicated to training.

I was privileged to be under the guidance of Mr David Rowlands and Mr Thomas Aust, both esteemed advanced laparoscopic surgeons with years of experience, observing and assisting in theatre and attending endometriosis clinics.

THEATRE – ADVANCED LAPAROSCOPIC SURGERY WITH MR ROWLAND AND MR AUST

I observed and assisted in gynaecology theatre with Mr Rowland and Mr Aust twice each, most lists involving complex endometriosis cases.

It was invaluable to be involved with these cases back-to-back, improving my understanding of anatomy such as the pararectal space and observing exposed nerves for the first time. The importance of sparing nerves as much as possible and so being cautious in excision due to this was a novel concept to me but obvious on reflection. Observing repetitive bilateral ureterolysis helped consolidate the steps of the procedure. Both Mr Rowland and Mr Aust are phenomenal surgeons with

different styles and techniques; it was helpful to observe the differences, but it also consolidated the basic principles of safe dissection that underpinned both practices.

The 3D stack routinely used was also a revelation, one I had never encountered or used previously. Its benefit in complex surgery was clearly shown with greatly improved depth perception and the additional benefit of no fogging of the camera due to the light source running along the scope keeping it warm. The image quality was superb and anti-fogging advantage I believe was time saving and kept frustrations at bay. I was surprised to learn that the stack itself was similar price to normal 2D stacks. Additional cost came from the £50 disposable sheath for the 3D camera; however, this cost was mitigated as the camera did not need to be sterilised, with subsequent risk of being damaged in the outsourced autoclave process. Therefore, only one camera needs to be purchased; it does not leave the gynaecology theatre department and can be stored safely. The 3D image could be turned on and off using a button on the camera head, which was useful for port entry when 2D was required. I am inspired to explore developing a business case for my hospital!

Example of theatre cases are detailed below.

Background	Findings	Procedure
15-year-old, pelvic pain.	Non-communicating right uterine horn.	Excision of non-communicating right uterine horn, right salpingectomy. Caiman device used, minimal blood loss, no suturing required Extracted with Burt bag using extended suprapubic site Endoclose for port site closure
Previous TLH, bilateral salpingectomy and left oophorectomy. Pelvic pain.	Right ovary adhered to right pelvis side wall.	Right oophorectomy and adhesiolysis. Right ureterolysis
Pelvic pain, previous first look by colleague diagnosed extensive endometriosis.	Extensive peritoneal endometriosis.	Laparoscopy, adhesiolysis, bilateral ureterolysis, excision of endometriosis
36-year-old, previous laparotomy for left ovarian mass (left salpingo-oophorectomy through pfannenstiel incision 2017 in different hospital). Previous CS and NVD. Pelvic pain, known endometriosis.	Extensive small and large bowel adhesions (mainly large) – left anterior abdominal wall and RIF. Rectum and sigmoid densely adherent to LIF, left external iliac vessels, left ovarian fossa, back of uterus. Bowel adherent to right anterior abdominal wall and right ovary (which was itself also adherent to right anterior abdominal wall).	Adhesiolysis+++; TLH and RSO, mobilisation of rectum, bilateral ureterolysis, excision of endometriosis (LIF, uterovesical peritoneum), washings for cytology, histology – uterus, RSO, endometriosis specimens. 4.5-hour case due to extensive adhesions - 2 left sided ports placed due to limited options re: bowel adhesions. - Bowel mobilised from suprapubic and RIF anterior abdominal walls – ports 4 and 5 placed suprapubically and RIF. -Left ureterolysis and bowel freed from back of uterus. -Right ureterolysis and bowel free from right ovarian fossa, right ovary and right anterior abdominal wall. -Ovary separated from anterior abdominal wall after securing tuba-ovarian vessels. -Hysterectomy performed. -Reflection of bladder – densely adherent to uterus – methylene blue used to check integrity. -Uterus – hemisection (knife morcellation) for vaginal delivery. -Endometriosis excision from uterovesical peritoneum and LIF. -EBL 200ml
Pelvic pain, known endometriosis from first look by referring hospital.	Rectal endometriosis.	Adhesiolysis, bilateral ureterolysis, mobilisation of rectum and excision of endometriosis.
27-year-old, pelvic pain on crutches. Previous surgeries – diagnostic laparoscopy, then laparotomy in Wales	Under GA – on VE nodule felt under cervix in posterior fornix.	Excision of endometriosis – rectovaginal, uterovesical, left uterosacral, right ovarian fossa, right extrapelvic peritoneum. Repair of partial colpectomy, mobilisation of rectum, bilateral ureterolysis.

for ovarian cystectomy, finally laparoscopy with colleague at WUTH who referred to endometriosis centre specialists.	Findings – partial obliteration of POD, not obvious initially. Endometriosis: -Right ovarian fossa -Rectal (deeply infiltrated) -Uterovesical -Left uterosacral -Right extrapelvic peritoneum	<ul style="list-style-type: none"> - <i>Right ovary suspended for exposure with loop of Monocryl inserted via needle endoclose</i> - <i>Rectal probe used – opened right pararectal space (medial to uterosacral)</i> - <i>Right side middle rectal vessels diathermied and dissected</i> - <i>Found rectovaginal space: Opened both pararectal spaces – came together to find – partially obliterated POD – mobilisation of rectum</i> - <i>Opened vagina, removed vaginal nodule (felt on VE)</i> - <i>Loss of gas – wet swabs used to mitigate</i> - <i>Closure of vaginal opening longitudinally (so not shorten vagina) with 3 extracorporeal knots</i> - <i>Adhesiolysis of left ovarian to uterine adhesion (from open left cystectomy)</i>
36-year-old, pelvic pain.	Endometriosis on right peritoneum pouch of Douglas and on uterovesical fold.	Laparoscopic excision of right peritoneum POD endometriosis. I performed excision of uterovesical nodule: <ul style="list-style-type: none"> - <i>Lift nodule off peritoneum and away from bladder, place under tension</i> - <i>Excise peritoneum with monopolar scissors (tip just touching to cut not coagulate)</i> - <i>Spread tissue away to get superficial plane – cut again with monopolar tip</i> - <i>Cold cut on inferior last part as close to bladder</i> - <i>Back of scissor blade pressed to cause coagulation</i>

TECHNIQUES, STRATEGIES AND INSIGHTS ENCOUNTERED

- First look is best in regard to locating endometriotic disease – once you start excising and there is some bleeding, it is then very difficult to see where the disease is, so you may then be excising areas on memory of the sites on the first look.
- With multiple areas of endometriosis to excise like in the last two cases, tackle the uterovesical disease last: it is usually superficial and easy to excise; if it bleeds it may obscure the view of the other sites to excise.
- Use of 2 instrument pairs: monopolar scissors and toothed graspers, for excising; bipolar and suction-irrigation, for coagulation and haemostasis.
- Use of monopolar scissors for excising disease but with blades closed and very light touch to cut when activated. Full touch with back of scissors coagulates when activated.
- Use of the back of the scissors to safely push the ureter away when performing ureterolysis.
- Use two instruments to spread open tissue in order to find planes.
- Adhesiolysis: purple planes are avascular and safe to cut.
- Must be patient when releasing dense adhesions – start somewhere, move to another part that appears safer, come back to harder parts, slowly you will release them and find your way.
- Even if endometriosis appears superficial, use a rectal probe if any disease is medial to the uterosacrals to check that the rectum is not involved.
- To perform the colpotomy during TLH, Mr Rowland used monopolar scissors to open the anterior portion just wide enough to hold the cervix with semi-toothed graspers. He then completed the colpotomy using a Caiman device.

ROBOTIC THEATRE – MR ROWLAND

Robotic surgery for certain urological procedures has become the gold standard, so it was apt that I first observed the da Vinci Robotic system in a urology case for radical prostatectomy. It was an amazing experience to see the robot in action and I was involved in draping the da Vinci robotic arms and setting up, which has its own learning curve and takes a considerable amount of time! This means there are only two cases on an all-day list. The console and the robot make up the two parts of the system and are connected by large blue fibre optic cables. The console is in the corner of the room,

away from the patient and operating table and the surgeon does not need to be scrubbed, a definite advantage! The rest of my observations are summarised in the table below, along with pros and cons I noted, of using the robotic as opposed to laparoscopic approach.

Console	Robot
<ul style="list-style-type: none"> - Corner of the room, operator not sterile - Table to rest elbows and small display, height pre-set for each user - Hand manipulators with thumb and forefinger placement rings - Binocular eye piece to see 3D camera image (2D image displayed for assistants) - Left foot pedals – upper to switch between robotic arms (1 and 3, 1 and 2 etc), lower pedal to activate hand manipulators while pressed to move camera arm - Right foot pedals – monopolar and bipolar 	<ul style="list-style-type: none"> - 4 arms: camera (0 or 30 degrees) and 3 operating tools (Scissors, Maryland bipolar, Prograsp) - Operating tools have more flexibility of angles - Camera and instruments stay in place if not activated by hand manipulators - 2 instrument operating and can use 3rd to hold tissue in place - Airseal port for assistant – to remove specimens, use suction, introduce tonsil swabs - 2D screen image with microphone/ speaker connected to console so can. communicate
Pros of robotic surgery	Cons of robotic surgery
<ul style="list-style-type: none"> - Ergonomics for surgeon – protects against occupational musculoskeletal injuries - Less reliant on assistants – manipulate own camera and instruments and they stay in place - Upgrades laparoscopic skills of surgeon <ul style="list-style-type: none"> o Increased manipulation of instruments o Easier to suture intracorporeally - 3D camera with excellent views - Airseal allows to operate at lower pressures, better for obese patients - Ability to annotate the view on the 2D screen in real time to help guide and train the robotic operator - ? can perform more complex procedures - ? less likely to convert to open 	<ul style="list-style-type: none"> - Expensive – outlay cost of £1.5million, then £200 each instrument use, lifespan of 10 uses - Takes time to set up <ul style="list-style-type: none"> o Patient anaesthetised for longer o Only 2 cases per full day list - 5 to 6 port sites required - 12mm port site for camera, 8mm for other instruments - Learning curve re: set up and port placement - Not useful for anterior abdominal wall adhesions near/ above umbilicus – cannot manoeuvre instruments - Extensive operator training required - No haptic feedback for surgeon

I observed Mr Rowland in robotic theatre on day 5 of my fellowship.

The first patient was a 24-year-old of BMI 30 with cyclical pain, listed for robotic-assisted excision of endometriosis, diagnosed on laparoscopy a month earlier. Mr Rowland emphasized the importance of examining the patient in theatre under general anaesthetic (and indeed in clinic in order to plan the operation) and in fact this patient had endometriosis nodules felt in the midline of the posterior vaginal wall on VE, not impacting on the uterosacral ligaments. Fortunately, these nodules were not full thickness and there was no need to remove an eclipse of the upper vagina when excising the endometriosis robotically. Left sided ureterolysis and mobilisation of the rectum were required to perform the excision safely. Anterior abdominal wall adhesiolysis was also performed prior to robotic port placement due to the adhesions being at the site required for the ports.

The second case listed was for robotic assisted myomectomy of a 20cm fibroid. Unfortunately, on inspection via palmer's point visiport, it was noted the fibroid was not pedunculated as suggested by the scans and therefore not possible to be performed laparoscopically. An above umbilical midline laparotomy was performed and a 2.2kg fibroid, along with 4 other golf ball sized fibroids, were removed with 1200ml blood loss.

CLINIC – MR AUST

During my time at WUTH, I appreciated the opportunity and educational value of discussing cases in clinic, whilst gaining insight into Mr Aust's holistic approach to the diagnosis and treatment of pelvic pain. Clinics were conducted remotely by telephone and also face to face. Most patients consulted had waited over a year for the appointment due delays caused by the pandemic.

Insights included:

- Thoughts on GnRH analogues
 - o Only be prescribed with continuous addback HRT from the outset. This was different to my previous teachings where a short course of GnRH without addback was deemed acceptable.
 - o Not useful as a long-term treatment following other medical therapies or superficial surgical treatment (such as diathermy to endometriotic spots) and therefore has minimal role in patients in their 20s.
 - o Useful for symptomatic control whilst waiting for surgery.
 - o Useful for decision making regarding definitive surgery once thorough excision of all visible endometriosis had been undertaken – review of symptoms 6 months post-operatively (as nerve fibres exposed and raw with extensive peeling of diseased peritoneum, so need time to heal) and only start Prostag then with addback HRT.
 - o If offers symptomatic control, the definitive surgery can be offered – either TLH or (not and) BSO.
 - o If Prostag does not improve symptoms following proper excision of visible disease, then it is unlikely to be endometriosis as cause of pelvic pain.
- Importance of two stage procedure and never dealing with severe endometriosis (extensive rectovaginal disease, frozen pelvis, obliterated POD) on first operation– take laparoscopic photos and consent patient properly for more risky surgery in terms of complications.
- Importance of viewing images from previous surgeries to understand the extent of disease and surgical management performed, in order to plan future treatment.
- Advocating a change Mirena IUCD after 2-3 years as believes hormonal output decreases in the last few years and therefore symptoms return. Likely to be treating adenomyosis rather than endometriosis.
- Use of MRI for diagnosis of adenomyosis.
- Likelihood endometriosis is hereditary in nature and laid down embryologically.

An example of patients consulted in clinic are below.

1. Patient in her late 30s, previous laparoscopic surgery performed twice, most recently in 2016 as a joint procedure with bowel surgeons for excision of rectal endometriosis. Symptoms of dyschezia still present but much improved compared to prior to last surgical excision. Recent MRI indicated presence of rectovaginal plaque and bowel luminal stricture noted. She had one child by forceps delivery 8 years ago and asked for review in clinic as she wished to conceive again. Telephone consultation centred around establishing severity of her symptoms, whether further surgery would improve fertility and would be worth the risks, given her symptoms were not too problematic currently. Mr Aust explained that there is poor evidence for improvement of fertility in excision of advanced endometriosis disease, unlike the advantage evident for surgical excision of mild or moderate disease. It would also be likely she would require joint procedure with bowel surgeons involving a bowel resection and therefore associated high risks of anastomotic leak and stoma formation. Decision to refer to bowel surgeons for assessment of luminal stricture (likely OP sigmoidoscopy) followed by review face to face with clinical examination discussion of findings in order to make decision.

2. 39-year-old, no previous abdominal surgery, apart from CS for twins 5 years ago at 34/40 due to TTTS, conceived naturally. Not looking to conceive again given her age. Investigated for pelvic pain and bilateral endometriomas noted on USS and MRI. Therefore 97% likely to have pelvic endometriosis on laparoscopy.
Listed for laparoscopic bilateral ovarian cystectomy and excision of endometriosis. Telephone discussion of risks including risk of two stage procedure if advanced disease identified involving the rectum. Also risk of bladder nerve damage as excision of advanced endometriosis disease risks damaging hypogastric nerve (this complication had been noted previously in a different patient, requiring intermittent self-catheterisation).
3. Patient in her mid 30s, completed her family with three vaginal deliveries. Mirena IUCD in situ since 2017, and a diagnostic laparoscopy in 2018 revealed a frozen pelvis with obliterated POD, with no excision performed due to this extensive advanced disease. She had trialled Prostag for one year, during which she still had pain and periods stopped only after several months. Surgical approach discussed with need for mobilisation of rectum. Referred to bowel surgeon for assessment and review of risks, for MRI and MDT discussion, as well as face to face appointment for examination, listing and proper consent.
4. Nulliparous 25-year-old with known endometriosis extensively excised in 2019. High BMI and PCOS diagnosed with menstruation only every 3 months. Unfortunately, Mirena IUCD was intolerable to the patient and removed after short trial. Prostag trialled for 3 months, but the patient did not realise it would not only delay trying to conceive but also could not be used as contraception. Initial benefit but ineffective by third month. Long-term holistic treatment regime was discussed. Joint plan reached and centred around weight loss as this would help restore hormonal balance therefore help with PCOS and improve chances to conceive. Normal BMI would also be necessary if later require NHS fertility funding. Advocated trying to conceive now if inclined to start family soon, as pelvic pain may improve and there was potential for further surgical treatment if required later once family completed.

GENERAL GYNAECOLOGY THEATRE

In the second week I attended theatre with Mr Weech, consultant urogynaecologist and clinical director, on a list mainly consisting of diagnostic laparoscopies, an ideal training opportunity for the SHO's. In addition to performing and teaching diagnostic laparoscopies, I observed cystoscopy and Botox injections for OAB treatment, performed under GA in the patient due to cystitis discomfort.

I also attended a theatre session with Miss Sally Pennington, gynaecology oncology consultant, assisting her perform a TLH using a McCartney tube, a vaginal delineator I had not used before. She used a monopolar hook to perform the colpotomy, removed the specimens through the vagina and then passed the 75cm vicryl 1 suture through the valved opening at end of the McCartney tube, with a clip at the vaginal end of the suture. Following running intracorporeal suturing to close the vault, the suture was passed back through the McCartney tube and tied at the vagina. I had not observed this technique of closing the vault before. She also performed ureterolysis as part of the TLH procedure, and this again helped consolidate my understanding of this procedure and the anatomy – stretching open the peritoneum parallel to the infundibulopelvic ligament to find the ureter within the triangle of the IP, external iliac and round ligament.

LAPAROSCOPIC SIMULATION SKILLS

On the occasions I had a spare moment, I would practice my laparoscopic suturing on the simulation box trainers available and I took time to learn the extracorporeal knot tying techniques used by Mr Aust and Mr Rowland at WUTH.

FINAL WORDS

This 10-day fellowship has been invaluable to my education, my training, my career aspirations, and equally importantly, my morale. As a year 5 trainee, I do not get sufficient theatre training time, often passing weeks without attending gynaecology theatre and this has been the same throughout my registrar years, despite substantial effort on my part to improve this. There are too many trainees at my level for too few theatre opportunities; gynaecology ATSM trainees in year 6 and 7 are prioritised and the precious theatre sessions I am allocated are often with different consultants each time and with minimal or basic laparoscopic procedures only. The current RCOG training programme with obstetric competencies required and heavy labour ward service provision does not allow for adequate gynaecology surgical exposure, especially in advanced laparoscopic procedures. Despite working at an accredited endometriosis centre, there were many surgical interventions, techniques and procedures I encountered for the first time during these two weeks.

Compared to previous BSGE travelling fellowship reports, WUTH may not be the most glamorous destination. However, in the 2018 BMJ multicentre, prospective cohort study evaluating the effectiveness and safety of laparoscopic excision of deep rectovaginal endometriosis in BSGE endometriosis centres, WUTH contributed the most patient numbers out of the 51 collaborators, proof of the merits of training there. Under the excellent guidance of Mr Rowland and Mr Aust, to whom I am most grateful, this period of dedicated exposure to laparoscopic gynaecology and endometriosis clinics has been invaluable.

I would like to thank the BSGE and my local department for enabling me to take time out of service provision to pursue my career aspirations, broaden my surgical horizon and increase my depth of knowledge. This opportunity would not have been possible without this generous award and also the support from my educational supervisor and mentor, Miss Donna Ghosh. I hope this report encourages other trainees at my level to apply and highlights the merit of educational opportunities available within the UK.

Sabrina Butt BSc MBBS MRCOG

Specialty Trainee Year 5 in Obstetrics and Gynaecology

Worcestershire Acute Hospitals NHS Trust

Sabrina.butt1@nhs.net