

Uterine Artery Embolization (UAE) - An effective therapeutic option for fibroid related symptoms

Dr Donia Amdouni (FY3), Miss Hend Hadawi (ST7), Miss Sonia Parveen (ST3), Dr Gibran Timothy Yusuf (Consultant Interventional radiologist), Mr Sathiyathan Sahathevan (O&G Consultant)

1. Background

Uterine fibroids are the most common form of benign tumour amongst women worldwide, with a 30% lifetime risk of developing at least one. Risk factors include high BMI and nulliparity. Fibroids also have a strong genetic predisposition and have been found to be most prevalent amongst black African ethnic groups. 1:4 women are symptomatic with symptoms and their severity depending on location and size of fibroid. The most commonly reported symptoms include menorrhagia, dysmenorrhea, dyspareunia, pressure sensation in the lower abdomen and urinary or bowel symptoms. With the median fibroid growth being 9% over 6 months these symptoms tend to worsen over time and can significantly affect quality of life and drives the importance of treatment and management. Uterine artery embolization (UAE) is a minimally invasive procedure, and a highly effective treatment for uterine fibroids. The aim of UAE is to completely infarct fibroid tissue while preserving the uterus, ovaries and surrounding pelvic tissues.

Uterine artery embolization history⁽²⁾
1991 - first used uterine embolization to treat fibroids
1995 - first published report in English literature
2000 - RCOG + RCR published joint guideline about UAE
2010 - NICE first published guideline approved the procedure as effective

HOPEFUL UK (1) retrospective study compares UAE vs Hysterectomy over 18 NHS trusts – findings show that complications rate with UAE 19% and 26% with hysterectomy. 75.7% UAE effective in management symptoms of adenomyosis

2. Objectives

- To assess the main indications used for UAE in our cohort of women
- To assess the outcomes of UAE (e.g. resolution of symptoms)
- To assess the rate of complications
- To assess the reintervention rate post UAE as well as duration post procedure

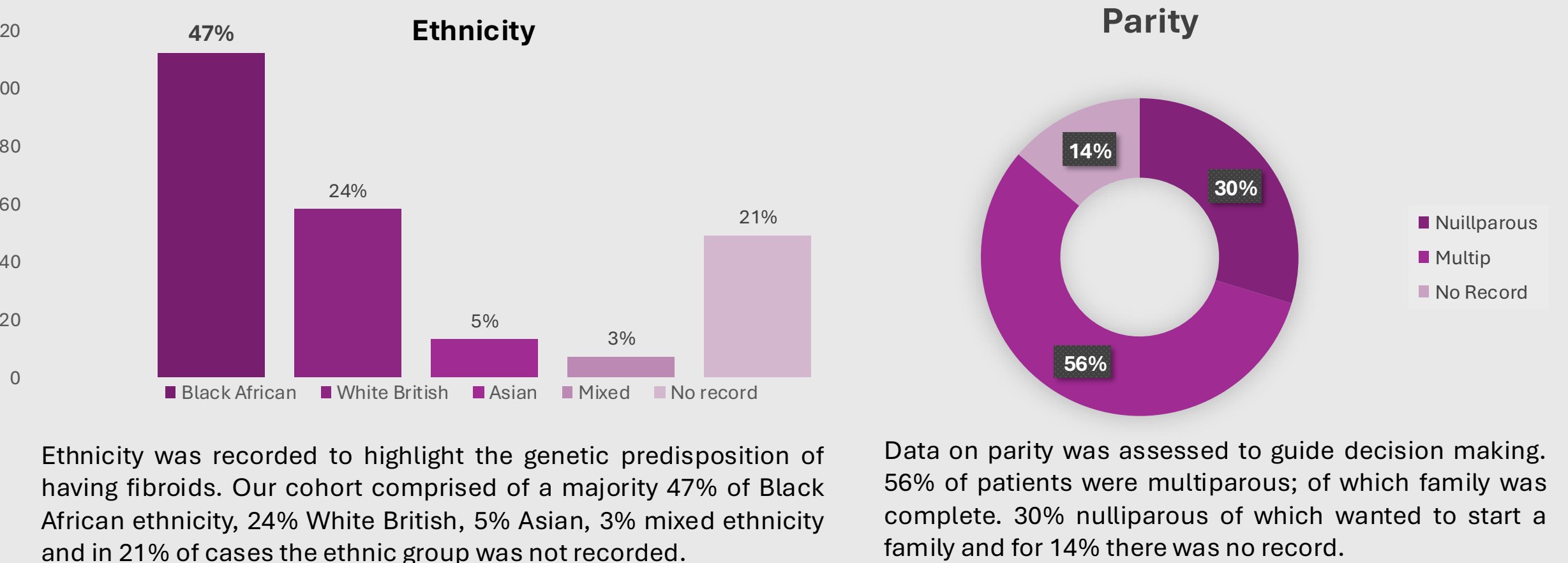
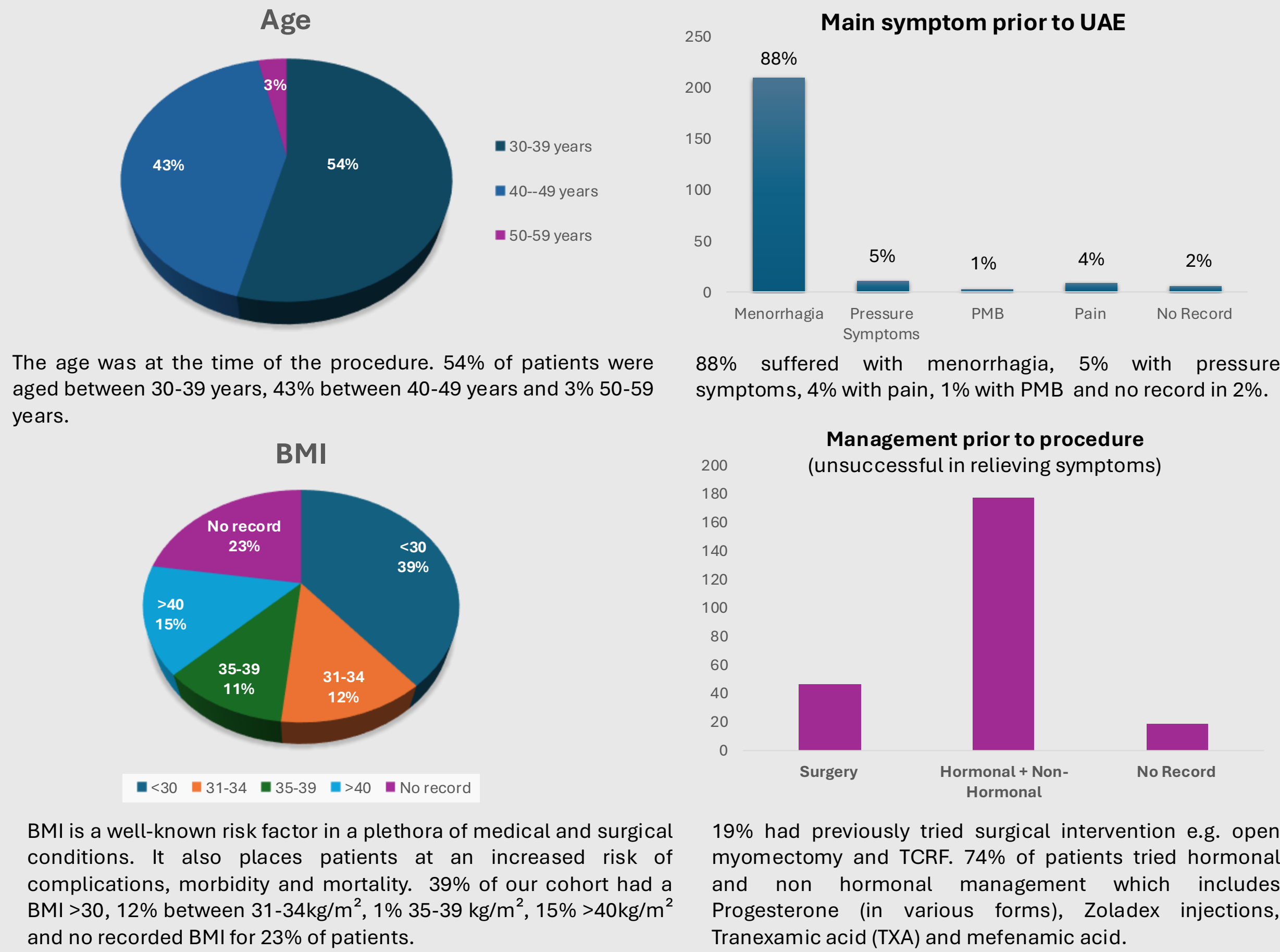
3. Methods

Data was collected from across 2 hospital sites; both King's College Hospital (Denmark hill) and Princess Royal University Hospital. The patient list was provided by the Imaging Informatics – PACS team, and data was gathered from local electronic systems (EPIC) containing historical records and from London care record.

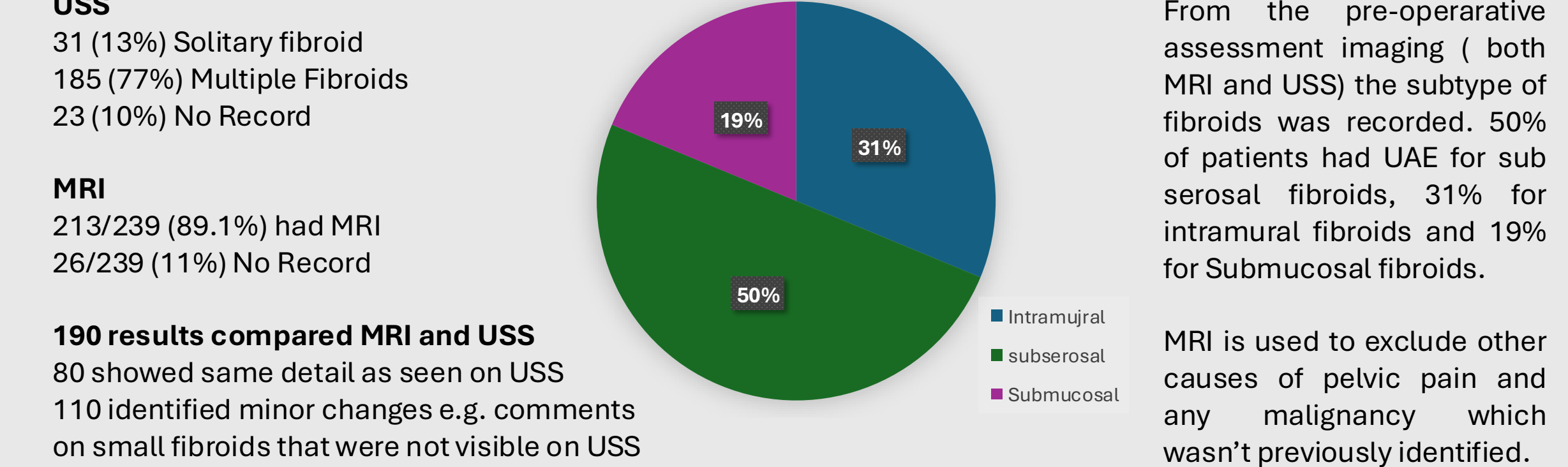
Retrospective data collection from 18th June 2010 – 18th Sept. 2023 (over 13 years) Including Women between 30-59 years with uterine fibroids +/- adenomyosis who underwent UAE at KCH or PRUH site.

In total, 239 women qualified for this audit and were identified to have had a UAE procedure from across both sites. (NB: PRUH started UAE in 2016, data gathered prior to 2016 was from DH)

4. Participants

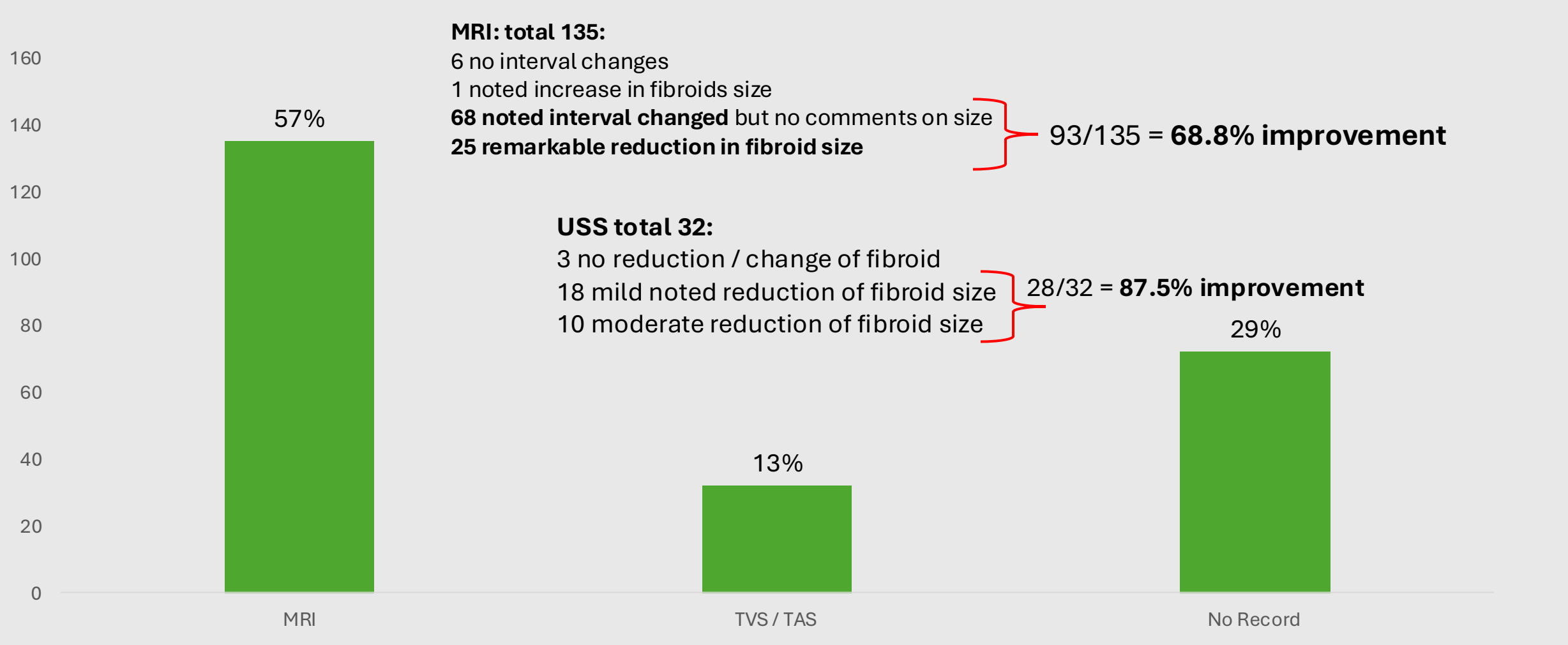


5. Imaging



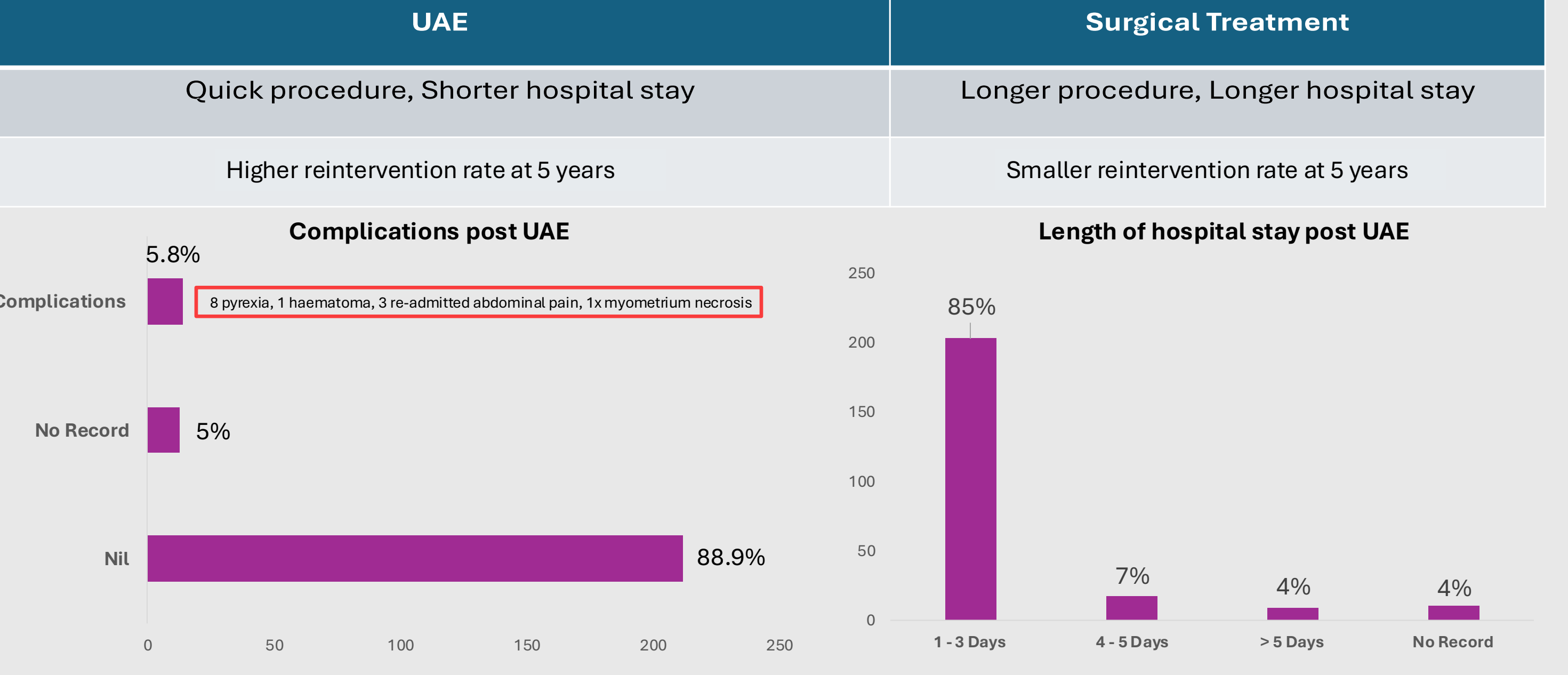
6. Results

Intra-procedural complications were minimal at 2.5%; these were attributed to wire perforation which is a minor and non concerning complication. The majority of women (89%) had no complications post- procedure, with less than 6% experiencing minor complications e.g. fever, haematoma, pain, and one case of myometrial necrosis. Length of hospital stay post UAE was 1-3 days in 85% of our cohort with only 4% having a prolonged admission of >5 days. Follow up procedure includes an MRI at 6 months post op - 57% had a follow up MRI and 13% had either a transvaginal ultrasound or an ultrasound abdomen. Analysis of the imaging reports revealed that 70% of MRI results demonstrated improvement radiologically with 68 scans commenting on interval change and 25 scans specifically commenting on a reduction in size. For follow up USS images, 87.5% reported visible reduction in size.. 43.5% of women had been discharged.



Additionally we recorded symptom improvement at the 6 month follow up appointment. 56% of patients (134 women) reported a significant improvement or a complete resolution of symptoms. 14% (33 women) reported minimal or no improvement and in 30% of patients (72 women) there was no recorded outcome – these patients possibly did not access further services due to becoming asymptomatic although we cannot be certain. As a result, if we exclude the data for which there is no record then the total percentage for symptomatic improvement in patients followed up would be 80% (134 women out of 167). In the patients who reported no improvement in symptoms (as well as a small proportion who reported improvement but not full resolution), they were offered further intervention. The table below demonstrates 58 women opted for further intervention, 19 of which had medical treatment and 39 had surgical intervention (6 myomectomies, 22 hysterectomies, 7 hysteroscopic resections, and 4 underwent repeat UAE). 43.5% of our cohort did not require further treatment.

Outcome	
Further intervention required 24.2% (58 women)	Interval time for further intervention (58 women)
❖ 19 had further medical treatment	❖ 20 no record
❖ 39 had surgical treatment (6 had myomectomy, 22 had hysterectomy, 7 had TCRF, 4 had repeat UAE)	❖ 8 within 2 years
	❖ 20 within 2-5 years
	❖ 10 over 5 years
43.5% of our cohort were discharged and did not require further intervention	



Conclusion

In summary, UAE is an effective treatment for managing uterine fibroids, offering significant symptom relief. It is cost-effective in the short and long term, as only a small proportion of the women in our cohort required further surgical intervention.

Our study demonstrates symptoms improvement in 80-90% of participants and a reduction in fibroid volume by 40-70%, notable drawbacks are that 32% of patients may require further intervention within five years post procedure. Data on reproductive outcomes following UAE remains limited, however studies indicate successful pregnancies following the procedure. HOPEFUL study⁽¹⁾ demonstrated that Twenty-seven women who had had UAE reported 37 pregnancies after treatment resulting in 19 live births. We were however unable to accurately assess the impact on fertility due to the limited availability of data and missing documentation on reproductive outcomes in our cohort. It is important to note that the position of RCOG and RCR is that evidence is poor and remains poor due to age and the premenopausal nature of patients. This data does not guide whether patients are suitable or not for UAE but is helpful when counselling patients on the risk of infertility.

UAE is overall an effective minimally invasive procedure, with a success rate at 80%. This is taking into account that there were no records in 30% of our patients – this is possibly a result of patients not attending follow up due to improved symptoms and this would mean there was a symptomatic improvement in 80% of the patients followed up post UAE which accounts for 56% of the total cohort. It is important to note that only 14% stated no improvement in the symptoms and would be useful for a further study to analyse the possible reasons that predisposes an unsuccessful procedure. Pelvic pain is complex and there may be coexistent pelvic congestion syndrome or other causes not detectable on MRI which may account for a failure state. UAE proves to be cost effective, 43.5% of patients in this cohort had been discharged after the procedure and no further intervention needed. Further surgical intervention was required in only 16% which accounts for a cost burden for 39 out of 239 patients.

Recommendations

- Improve documentation on hospital systems e.g. EPIC, PACS, LCR
- Create a database at IR for Gynaecology procedures
- Future audit or research - comparing surgical treatment vs UFE to assess the effectiveness of both intervention at local level vs national rate / assess pregnancy outcome post UFE to assess the impact of UFE on future pregnancy, can get our local data which could help to council women / narrow study to one site e.g. KCH only or PRUH only or a site breakdown of data.