

Management of Borderline Ovarian Tumours: A Comprehensive Review of Published Evidence

Dr Kyriaki-Barbara Papalois(1), Dr Samuel Oxley(2), Mr Michail Sideris(2,3), Professor Ranjit Manchanda(2,3,4)

(1) Oxford University Hospitals NHS Foundation Trust, Churchill Hospital Old Rd, Headington, Oxford OX3 7LE, Oxford, United Kingdom. (2) Wolfson Institute of Population Health, Barts CRUK Cancer Centre, Queen Mary University of London, Charterhouse Square, London EC1M 6BQ, UK, London, United Kingdom.(3)Department of Gynaecological Oncology, Barts Health NHS Trust, London, UK, EC1A 7BE, London, United Kingdom. (4) Department of Health Services Research and Policy, London School of Hygiene & Tropical Medicine, London WC1H 9SH, UK, London, United Kingdom

INTRODUCTION

Borderline Ovarian Tumours (BOTs) comprise 15-20% of all epithelial ovarian tumours. BOTs are characterised by increased mitotic activity but lack infiltrative destructive growth and stromal invasion (1). With an incidence of 1.8-4.8 per 100,000 they can affect one third of pre-menopausal women (2). The disease carries an excellent prognosis for the majority of patients albeit consensus regarding aspects of BOT management has not been reached.

OBJECTIVES

Non-consensus in BOT management was reviewed in literature including approach (radical versus fertility-sparing surgery); route (open v laparoscopic surgery); disease recurrence; follow-up protocols and modalities (imaging, serum biomarkers); role of completion surgery; lymph node dissection during staging, or adjuvant chemotherapy; as well as use of Hormone- Replacement Therapy (HRT) post-surgery (Figure A).

A

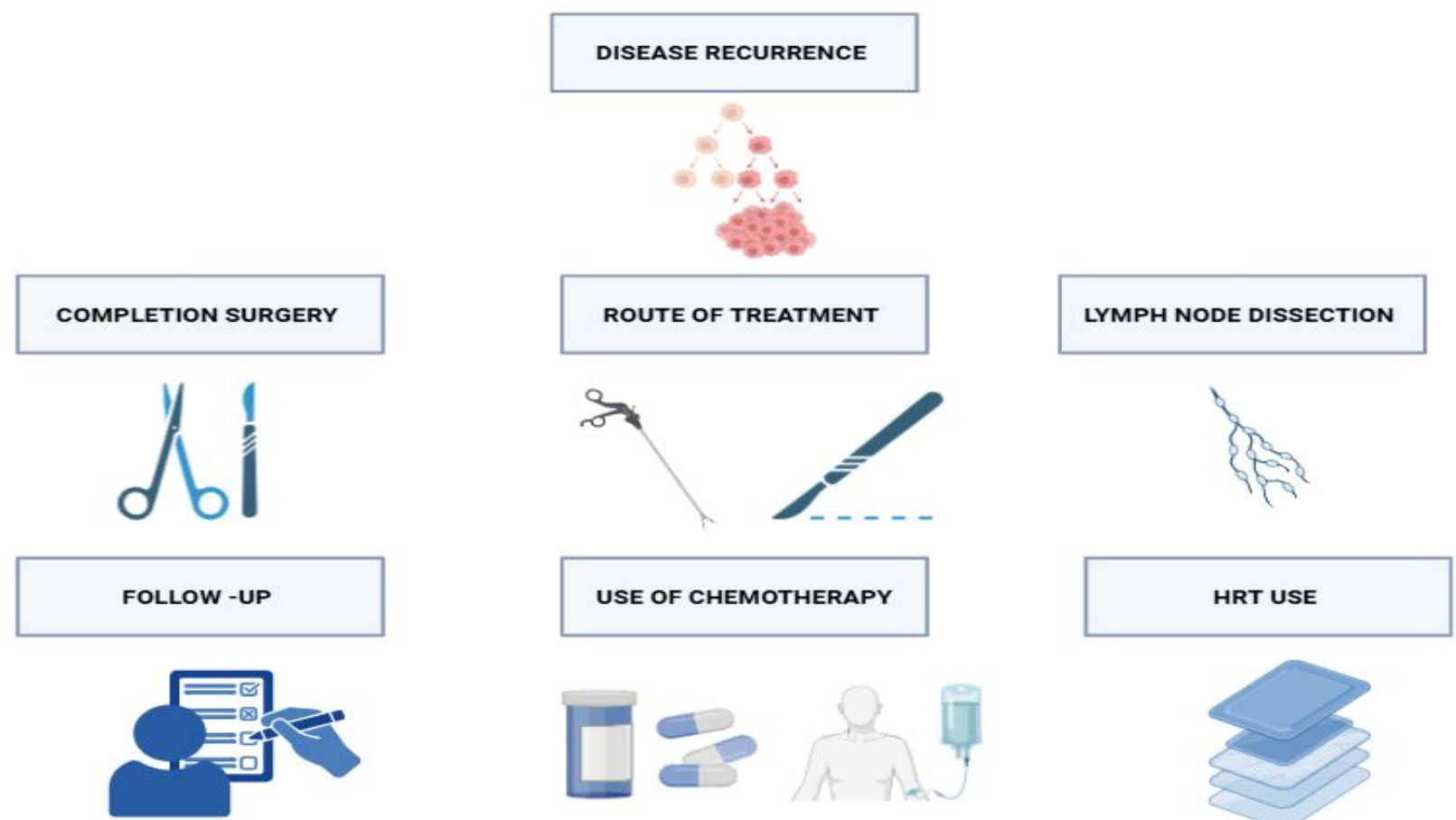


Figure A- Schematic describing the themes which have shown non-consensus and merit from further investigation to inform BOT treatment. Original diagram. Created in <https://BioRender.com>

METHODS

We performed a structured narrative review on Medline, EMBASE and Cochrane Library Databases to identify studies pertaining to the management of BOTs as well as guidance from international societies, including but not limited to the Federation of Gynaecology & Obstetrics; European Society of Gynaecological Oncology; British Gynaecological Cancer Society. Guidance was summarised on the route of surgery, recurrence rates and prognosis, follow-up and role of serum biomarkers for surveillance, completion surgery, role of lymphadenectomy, role of chemotherapy, use of hormone replacement therapy and novel approaches to BOT management (3-7) (Figure B).

B

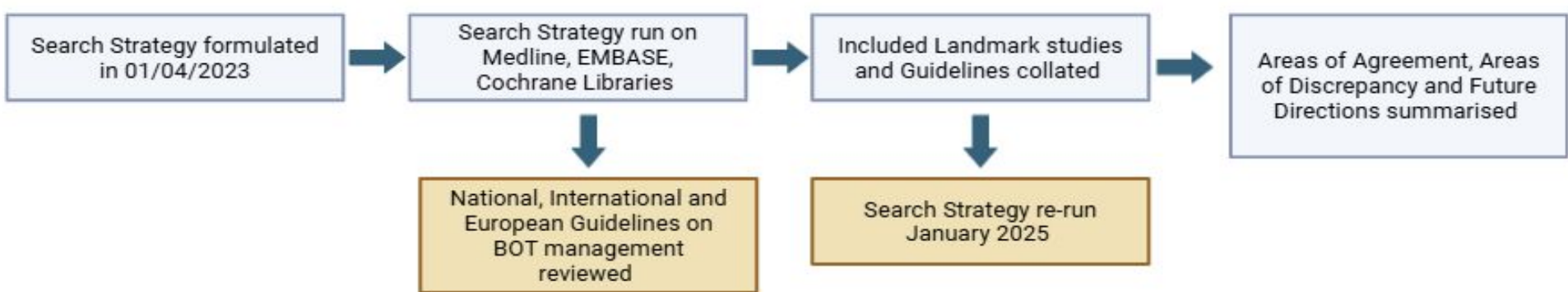


Figure B- Schematic of methodology. Original diagram. Created in <https://BioRender.com>

REFERENCES

- (1) Nayyar N, Lakhwani P, Goel A, Pande PK, Kumar K. Management of Borderline Ovarian Tumors-Still a Gray Zone. Indian J Surg Oncol. 2017;8(4):607-14. <https://doi.org/10.1007/s13193-017-0697-3>.
- (2) Skirnisdóttir I, Garmo H, Wilander E, Holmberg L. Borderline ovarian tumors in Sweden 1960-2005: trends in incidence and age at diagnosis compared to ovarian cancer. Int J Cancer. 2008;123(8):1897-901. <https://doi.org/10.1002/ijc.23724>.
- (3) Fotopoulou C, Hall M, Cruickshank D, Gabra H, Ganesan R, Hughes C, et al. British Gynaecological Cancer Society (BGCS) epithelial ovarian/fallopian tube/primary peritoneal cancer guidelines: recommendations for practice. Eur J Obstet Gynecol Reprod Biol. 2017;213:123-39. <https://doi.org/10.1016/j.ejogrb.2017.04.016>.
- (4) N C. ESMO-ESGO consensus conference recommendations on ovarian cancer: pathology and molecular biology, early and advanced stages, borderline tumours and recurrent disease. In: Colombo N, Sessa C, Bois Ad, Ledermann J, McCluggage WG, McNeish I, et al., editors. Annals of Oncology 2019.
- (5) Moss E, Taylor A, Andreou A, Ang C, Arora R, Attygalle A, et al. British Gynaecological Cancer Society (BGCS) ovarian, tubal and primary peritoneal cancer guidelines: Recommendations for practice update 2024. (1872-7654 (Electronic)).
- (6) Network NCC. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) National Comprehensive Cancer Network 2023. p. pp. 23–5.
- (7) Berek JS, Kehoe ST, Kumar L, Friedlander M. Cancer of the ovary, fallopian tube, and peritoneum. Int J Gynaecol Obstet. 2018;143 Suppl 2:59-78. <https://doi.org/10.1002/ijgo.12614>.

RESULTS

There were areas of general consensus surrounding BOT management. Generally, BOTs are associated with a very good prognosis. Fertility-sparing options for younger women are safe albeit carry a higher risk of recurrence which must be communicated to patients (Figure C). Laparoscopic surgery where technically possible is feasible and subsequent radical surgery may be performed as a second stage albeit there is no prognostic benefit to hysterectomy. Advanced disease is best managed at specialist centres and adjuvant chemotherapy and lymphadenectomy have shown to have a menial role in BOT treatment. Areas of disagreement include the modality and length of follow-up of patients after surgery as well as the use of serum biomarkers in prognosis and the role of hormone replacement (Figure D).

C

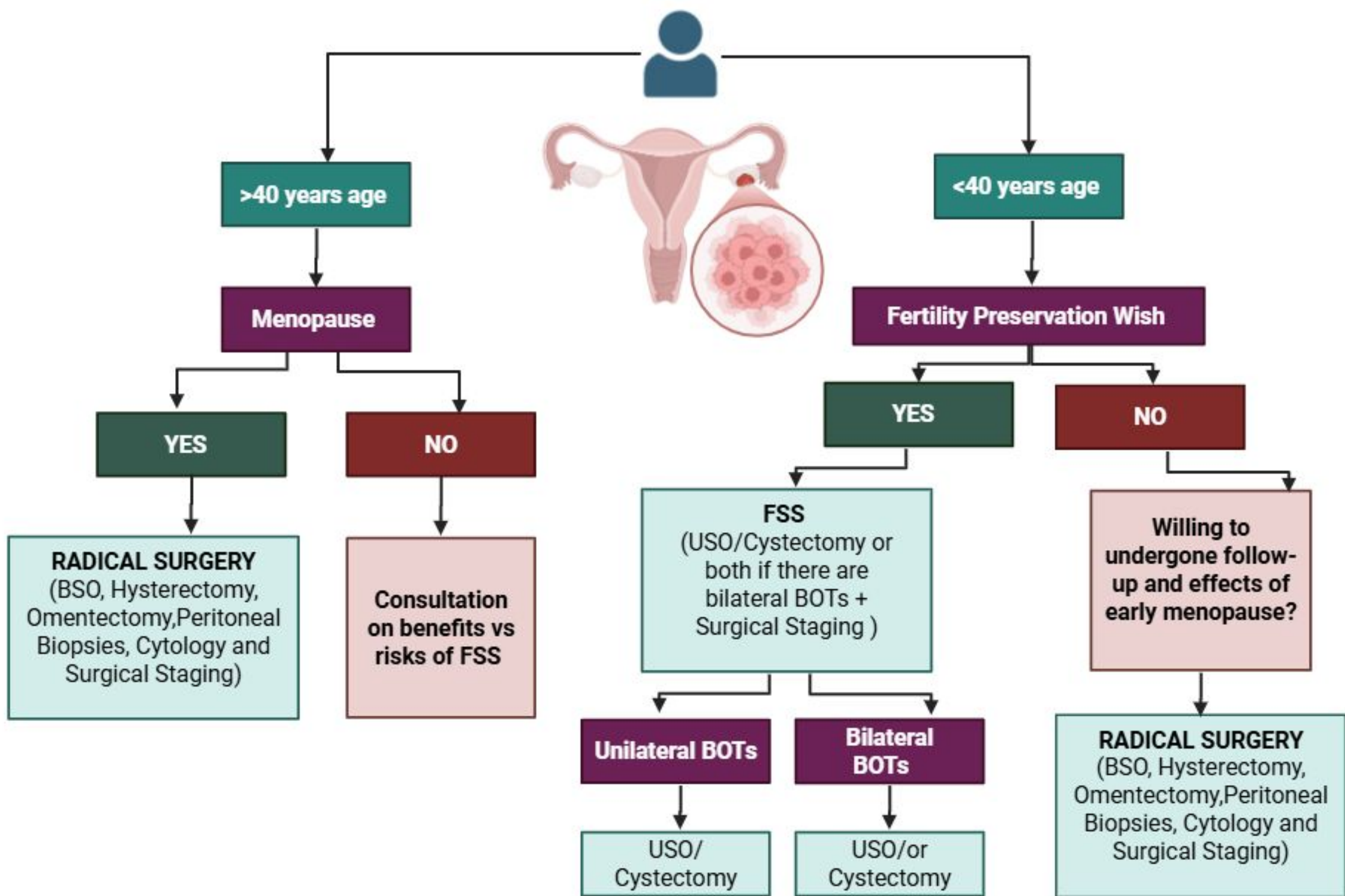


Figure C- Flow diagram describing potential treatment approaches for BOT management in different age groups informed from the structured narrative review. Bilateral Salpingo-oophorectomy (BSO), Unilateral Salpingo-oophorectomy (USO), FSS (Fertility Sparring Surgery) Original diagram. Created in <https://BioRender.com>

D

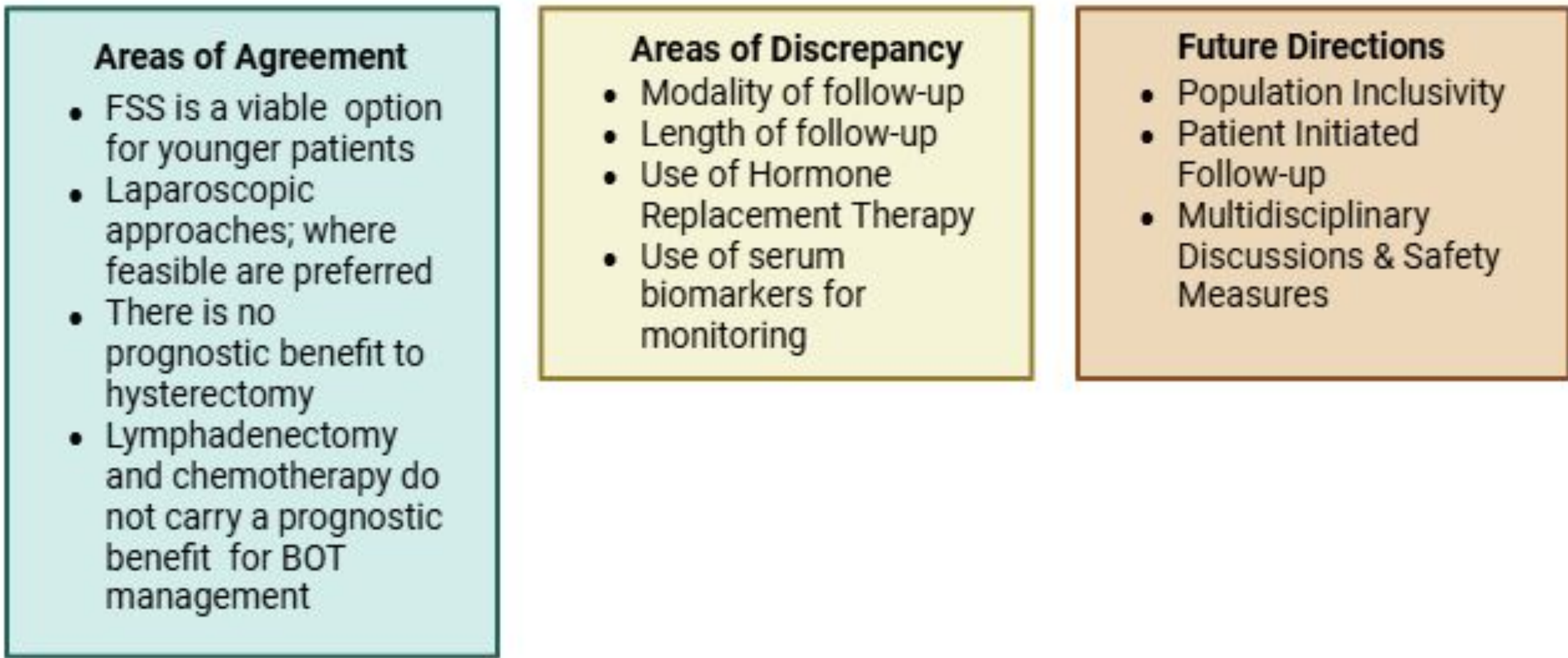


Figure D-Summary of findings of structured narrative review and future directions. Original diagram. Created in <https://BioRender.com>

CONCLUSIONS

To our knowledge this is the first review to summarise current consensus on management and follow-up of BOTs. Further research into the molecular profile of BOT's; identifying novel biomarkers linked with recurrence and development of risk prediction models for recurrence would aid standardising the patient follow-up process (Figure D). Moreover, prospective trials evaluating quality of life after BOT treatment and use of therapies such as HRT are necessary to optimise safety and patient outcomes.

