

# INPLASY

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## Corresponding author:

Sun-Wei Guo

hoxa10@outlook.com

## Author Affiliation:

Shanghai Obstetrics and Gynecology Hospital, Fudan University, Shanghai 200011, China.

## Reproductive outcomes in women with uterine fibroids: High-intensity focused ultrasound vs. myomectomy

Chen, YS; Yi, JS; Lin, SH; Xie, X; Liu, XS; Guo, SW.

## ADMINISTRATIVE INFORMATION

**Support** - This research was supported by National Natural Science Foundation of China (82071623 to S.W.G.), and Shanghai Shenkang Center for Hospital Development (SHDC2020CR2062B to S.W.G.).

**Review Stage at time of this submission** - Formal screening of search results against eligibility criteria.

**Conflicts of interest** - YC, JY, SL, XX and XL have no conflict of interest. S.W.G. is a Board member of the Asian Society of Endometriosis and Adenomyosis, a member of the Scientific Advisory Board of the Endometriosis Foundation of America, Heranova BioSciences, and FimmCyte AG, and has provided paid consultancy advice to the companies, as well as to Sound Bioventures, and BioGeneration, but these activities had no bearing on this work.

**INPLASY registration number:** INPLASY202440018

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 April 2024 and was last updated on 19 October 2024.

## INTRODUCTION

**Review question / Objective** **Review question / Objective** To compare the reproductive outcomes, i.e. pregnancy rate (PR) and live birth rate (LBR), in UF patients who desired to preserve their uteri after treatment with HIFU or myomectomy.

**Rationale** A recent meta-analysis claimed that high-intensity focused ultrasound (HIFU) has comparable reproductive outcomes as myomectomy and is a viable fertility-sparing modality for patients with uterine fibroids (UF) over 40 years. Spotting errors and inadequate analysis, we corrected data errors and extracted more data, and re-analyzed the data.

**Condition being studied** High-intensity focused ultrasound (HIFU) is a non-invasive treatment modality for uterine fibroids (UF), offering an alternative to other standard of care such as myomectomy. A recent meta-analysis claimed that HIFU has comparable reproductive outcomes as myomectomy and is a viable fertility-sparing modality for UF patients over 40 years. However, a careful reading of the study unveiled data errors and inadequate analysis.

## METHODS

**Search strategy** We performed an exhaustive search of PubMed, Web of Science, the Cochrane Library, and EMBASE databases on related studies published in English up to March 28, 2024. The following medical subject heading terms,

keywords, and their combinations were used to search for all possible publications: high-intensity focused ultrasound ablation, HIFU, laparoscopy, laparoscopes, laparoscopic, laparotomy, laparotomies, abdominal, leiomyoma, uterine fibroid, myoma, pregnancy, and fertility.

**Participant or population** Patients with uterine fibroids (UF).

**Intervention** High-intensity focused ultrasound and myomectomy for women with uterine fibroids.

## METHODS

**Search strategy** We performed an exhaustive search of PubMed, Web of Science, the Cochrane Library, and EMBASE databases on related studies published in English up to March 28, 2024. The following medical subject heading terms, keywords, and their combinations were used to search for all possible publications: high-intensity focused ultrasound ablation, HIFU, laparoscopy, laparoscopes, laparoscopic, laparotomy, laparotomies, abdominal, leiomyoma, uterine fibroid, myoma, pregnancy, and fertility.

**Comparator** None.

**Study designs to be included** The following medical subject heading terms, keywords, and their combinations were used to search for all possible publications: high-intensity focused ultrasound ablation, HIFU, laparoscopy, laparoscopes, laparoscopic, laparotomy, laparotomies, abdominal, leiomyoma, uterine fibroid, myoma, pregnancy, and fertility.

**Eligibility criteria** For retrieved publications, the exclusion criteria were: (1) reviews, animal experiments, case reports, conference abstracts, conference proceedings, editorial letters, guidelines or commentary; (2) duplicated studies; (3) publications for which full text was not available.

**Information sources** PubMed, Web of Science, the Cochrane Library, and EMBASE databases.

**Main outcome(s)** For all retrieved studies, the reproductive outcome was designated as the primary outcome, including pregnancy, live birth, and miscarriage.

**Additional outcome(s)** None.

**Data management** Data extraction was conducted by one author (YSC) and verified

independently by another author (SWG). Any ambiguity in data was clarified by discussion between the two authors, and any disagreements were resolved through consensus.

### Quality assessment / Risk of bias analysis

Quality assessment of the study quality was performed independently by two investigators (YSC and JSY), utilizing the Newcastle- Ottawa Scale (NOS) for Cohort studies (ref), Any disagreement was resolved by deliberation, and additional views from the senior author (SWG).

**Strategy of data synthesis** The following data items were extracted from the HIFU and MYOM studies as reviewed by 7: title, name of the first author, study type (prospective or retrospective), journal name, year of publication, the country of the study, sample size, average age, reproductive outcomes post-treatment (pregnancy, live birth, miscarriage) and potential conflict of interest (COI).

**Subgroup analysis** Using group identity, age, sample size, type of journal, year of publication, quality score, specificity statement, presence of possible COI, and studies with a possible COI.

**Sensitivity analysis** Sensitivity analysis to evaluate the robustness of research findings by systematically excluding individual studies.

**Language restriction** English.

**Country(ies) involved** China.

**Other relevant information** None.

**Keywords** High-intensity focused ultrasound; myomectomy; pregnancy rate; live birth rate; miscarriage rate; uterine fibroids.

### Dissemination plans

1. Academic Publication: Results will be submitted to peer-reviewed journals, ensuring accessibility to the scholarly community.

2. Conference Presentation: Findings will be shared at relevant national and international conferences to facilitate knowledge exchange and gather feedback.

### Contributions of each author

Author 1 - Yishan Chen. Investigation; Data curation; Methodology; Roles/Writing - original draft; Writing - review & editing.

Email: ys.chen@outlook.com

Affiliation: Fujian Maternity and Child Health Hospital, College of Clinical Medicine for

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Obstetrics & Gynecology and Pediatrics, Fujian Medical University, Fuzhou, Fujian 350001, China

Author 2 - Jingsong Yi. Investigation; Data curation; Methodology; Roles/Writing - original draft; Writing - review & editing.

Email: 3129671082@qq.com

Affiliation: Fujian Maternity and Child Health Hospital, College of Clinical Medicine for Obstetrics & Gynecology and Pediatrics, Fujian Medical University, Fuzhou, Fujian 350001, China

Author 3 - Shunhe Lin. Investigation; Data curation; Methodology; Roles/Writing - original draft; Writing - review & editing.

Email: lsh2816@sina.com

Affiliation: Fujian Maternity and Child Health Hospital, College of Clinical Medicine for Obstetrics & Gynecology and Pediatrics, Fujian Medical University, Fuzhou, Fujian 350001, China

Author 4 - Xi Xie. Investigation; Data curation; Methodology; Roles/Writing - original draft; Writing - review & editing.

Email: xiexi668@sina.com

Affiliation: Fujian Maternity and Child Health Hospital, College of Clinical Medicine for Obstetrics & Gynecology and Pediatrics, Fujian Medical University, Fuzhou, Fujian 350001, China

Author 5 - Xishi Liu. Project administration; Resources; Supervision; Writing - review & editing.

Email: lxsdoc@hotmail.com

Affiliation: Dept. of Gynecology, Shanghai Obstetrics and Gynecology Hospital, Fudan University, Shanghai 200011, China

Author 6 -Sun-Wei Guo. Conceptualization; Formal analysis; Funding acquisition; Investigation; Resources; Validation; Visualization; Roles/Writing - original draft; and Writing - review & editing.

Email: hoxa10@outlook.com

ORCID [orcid.org/0000-0002-8511-7624](https://orcid.org/0000-0002-8511-7624)

Affiliation: Shanghai Obstetrics and Gynecology Hospital, Fudan University, Shanghai 200011, China