Accepted: 3 June 2024 | Published Online 24 June 2024

DOI: 10.1111/1471-0528.17886

BJOG An International Journal of Obstetrics and Gynaecology

SYSTEMATIC REVIEW

Reconstructive surgery for women with female genital mutilation: A scoping review

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Abstract

Background: Female genital mutilation (FGM) is a global public health concern. However, reconstructive surgery remains unavailable in many countries.

Objectives: This scoping review, guided by Joanna Briggs Institute (JBI) principles, explores indications, referral routes, eligibility, care pathways and clinical outcomes of reconstructive surgery for FGM.

Search strategy: Medical Subject Headings (MeSH) terms and subject headings were searched in EMBASE, MEDLINE, SCOPUS, Web of Science and publicly available trial registers.

Selection criteria: Any primary experimental and quasi-experimental study addressing reconstructive surgery for FGM, and its impact on women, published before June 2023.

Data collection and analysis: After removing duplicates from the search results, titles and abstracts were screened and data were extracted. Disagreements were resolved through panel discussion. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) flow diagram depicts the search results and inclusion process.

Main results: A total of 40 studies were included. Multidisciplinary teams were involved in 40% (16/40) of the studies, and psychosexual counselling was offered in 37.5% (15/40) of studies. Clitoral reconstruction using Foldes' technique was predominant (95%, 38/40). A total of 7274 women underwent some form of reconstruction. Post-surgery improvement was reported in 94% of the cases (6858/7274). The complication rate was 3% (207/7722 women with reconstruction).

Conclusions: Further research and clinical trials are needed. Although the outcomes suggest improved sexual function and quality of life post-surgery, the evidence remains limited. Advocating surgical reconstruction for survivors of FGM is vital for addressing health disparities and potential cost-effectiveness.

KEYWORDS

clitoral reconstruction, cutting, emotional support, female genital mutilation, labia reconstruction, model of care, outcome assessment, psychosexual counselling, psychosexual therapy, reconstructive surgery, referral pathway

1 | INTRODUCTION

Female genital mutilation (FGM) is a serious public health concern involving the partial or complete removal of the external genitalia for non-medical reasons.[1] FGM is classified into four types, with types 1–3 illustrated in Figure.[2] FGM is a violation of human rights and affects 230 million women worldwide, predominantly in Africa, the Middle East and Asia, but also in areas where FGM is not traditionally practiced.

Reconstructive surgery involves the reconstruction of the clitoris, and/or the inner and/or outer labia, depending on the type and extent of the FGM. Currently, reconstruction is not available in many countries, including the UK. However, it has been available in France since 1998,[3] and is currently available in several countries in Europe, Africa and parts of the USA, through either public health systems or the charity/private sector.[4] One reason for the variability in current reconstruction service provision lies in a tension between the level of evidence and innovation, with healthcare guidance and commissioning bodies in different countries reaching differing conclusions. Reconstructive surgery aims to reinstate the appearance and sexual function of the genitalia, as well as improve psychological well-being.[5] There is increasing evidence that clitoral reconstruction (CR), alone or with labial reconstruction, can help treat genital pain, improve sexual pleasure and help with body image concerns that may, in the long term, improve sexual relationships, quality of life and psychological well-being.[6]

In the UK, it is estimated that 137 000 women have undergone FGM. Currently, the National Health Service (NHS) in the UK offers defibulation or cyst removal, but full FGM reconstruction has not yet been commissioned. However, there is growing demand for reconstruction surgery from FGM-affected communities living in the UK, with some women travelling abroad to obtain surgery or accessing reconstruction in the private sector, where care is unregulated and costly for the patient. In 2020, the voluntary collective Advocating for Access to Clitoral Reconstruction and Emotional Support Within a Research Framework (ACERS-UK) was set up by JA and SE to address this gap in the care management of UK survivors of FGM. The present scoping review forms part of the multidisciplinary team's research pathway to inform the development of a new national reconstruction service for survivors of FGM (fgmnetwork.org.uk/fgm-reconstruction-surgery).

The primary aims of this scoping review were to define the minimum criteria for the design of future clinical trials, including indications for reconstructive surgery, referral routes, eligibility criteria and care pathways. The secondary aim was to identify models of care, clinical outcomes and the methodologies used to assess them.

2 | METHODS

This scoping review was conducted in accordance with the methodological guidance of the Joanna Briggs Institute (JBI).[7–9] The protocol has been prospectively registered in Open Science Framework (reference https://osf.io/hwj83/?view_only=78969928c2d84dc2af11351746be9a60).

2.1 | Search strategy

The search strategy, built with the support of a professional academic medical librarian, included subject headings and text words related to FGM reconstructive surgery.

The databases searched included EMBASE (OvidSP), MEDLINE (OvidSP), SCOPUS, Web of Science and publicly available trial registers (ClinicalTrials.gov and the WHO International Clinical Trials Registry Platform). The search strategy for EMBASE, MEDLINE, SCOPUS and Web of Science is shown in Tables S1–S4. The search was performed in June 2023.

2.2 | Eligibility criteria

Any published primary experimental and quasi-experimental published study design addressing FGM reconstructive surgery and its impact on women was considered eligible. We also considered studies focusing on qualitative data. The search was not limited by language, and Google Translator (Google, Mountain View, CA, USA) was used if required, as validated by Baulk et al.[10]

2.3 | Data extraction

Identified citations were uploaded to EndNote 9 (Clarivate, Philadelphia, PA, USA), and duplicates were removed. Titles and abstracts were then screened by two independent reviewers (AA and JA). Data were extracted by four reviewers (SP, CC, AA and JA). Any disagreements were resolved through panel discussion. The search results and the study inclusion process are presented in a Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) flow diagram (Table S5), following the PRISMA guidelines.[11]

Multiple authors published more than one publication. In those cases, the corresponding authors were approached and requested to clarify whether the cohort of women was duplicated among different studies, and the repeated data were subtracted from the calculations.

3 | RESULTS

3.1 | Screening process

Of the 717 identified references, 40 studies matching our inclusion criteria were included. The details of the screening process are shown in Figure 1.

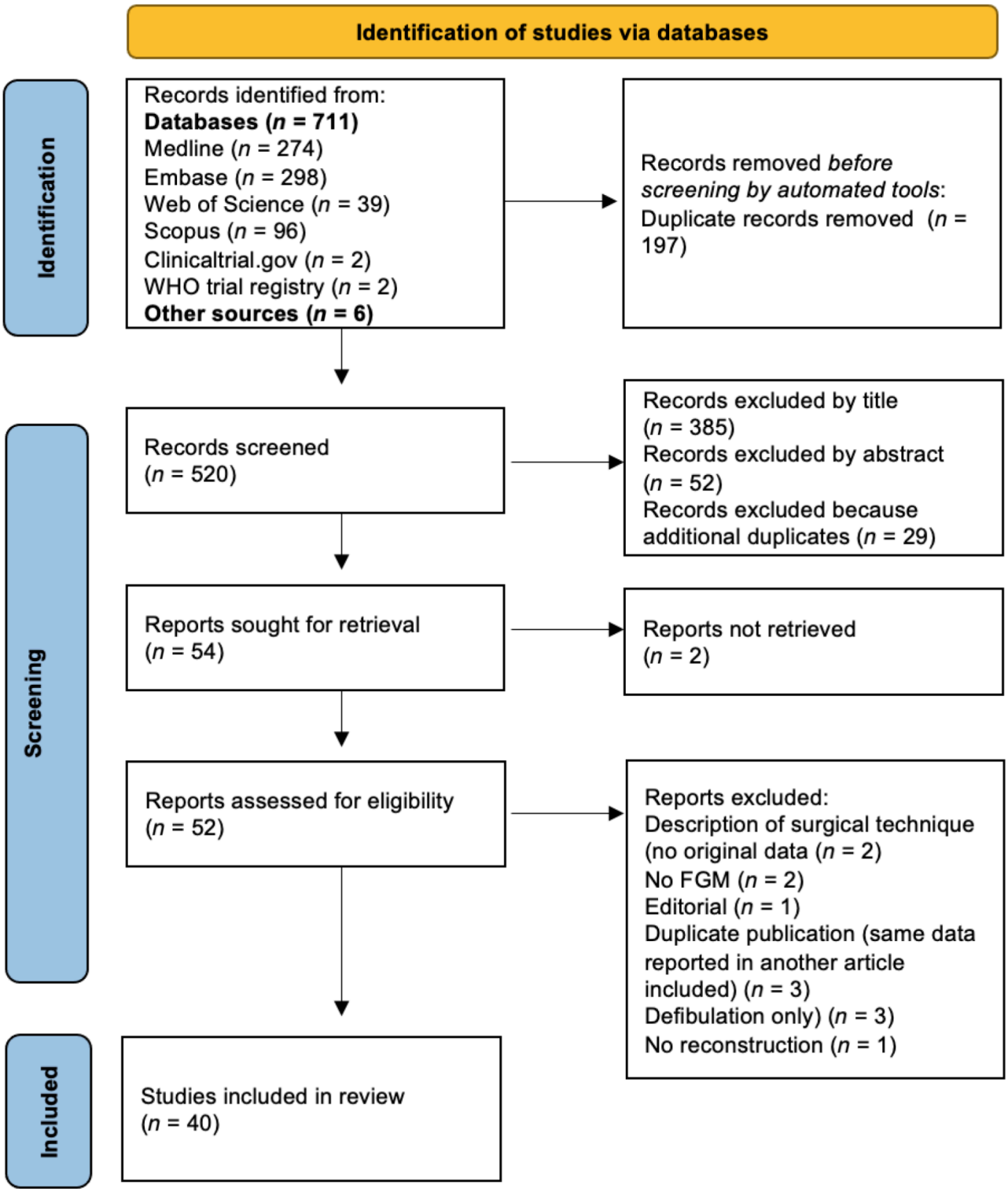

FIGURE 1 PRISMA flow chart, illustrating the screening process.

3.2 | Characteristics of included studies

The 40 articles included (Table 1) were composed of journal articles ($n = 31$), abstracts ($n = 8$) and book chapters ($n = 1$).[3,12–50] The geographical distribution of the studies was as follows: ten were conducted in France; seven in Switzerland; four in Spain; three in Egypt and Sudan; two in Belgium, USA, Sweden and Burkina Faso; one in Canada, Senegal and the Netherlands; one was a collaboration between France, Belgium and Switzerland; and one was a collaboration between Italy and the UK.

Studies were assigned a level of evidence that was overall deemed to be low,[51] with 12 studies (30%) at level 5, 23 studies at level 4 (57.5%), four studies at level 3 (10%) and one

study at level 2 (2.5%) (Table 1). There were no randomised controlled trials (RCTs) and only one rigorous prospective cohort study. Six articles (15%) were case reports with one participant only, 14 articles (35%) were case series including fewer than ten women, one was a book chapter involving five participants and two articles did not include participants (one reported upon a survey of surgeons and another was a service description).[20,21] After removing patients duplicated among multiple studies, the total number of women included was 7722; among them, 7274 underwent reconstruction (Table 1). Fazari et al. included 3750 women,[16] Foldes et al. included 2938 women,[3] Merckelbagh et al. reported on 169 cases,[37] and Thabet et al. reported on 147 cases.[46] All other studies included fewer than 100 cases. The publication dates ranged from 2003 to 2023, although 75% (30/40) were published after 2015, demonstrating the increasing interest in this topic.

There was considerable variation in the sociodemographic characteristics of the included women (Table 2). Some studies reported country of origin, whereas others reported ethnicity. The largest number of women were from Burkina Faso ($n=167$), followed by Egypt ($n=54$), Mali ($n=71$), Senegal ($n=52$), Somalia ($n=34$), Guinea Bissau ($n=30$), Eritrea ($n=29$), Ivory Coast ($n=24$), Guinea ($n=12$), Sudan ($n=8$), Sierra Leone ($n=5$), Gambia and Iraq ($n=2$), and Mali and Ethiopia ($n=1$).

The average patient age was 23.3–44.5 years, with an age range of 19–35 years. The exceptions were Abramovic et al.[18] and Diouf et al.,[24] who reported age ranges of 13–29 and 14–38 years, implying that girls under the age of 18 years had undergone reconstruction surgery.

The majority of women were classified as having type 2 ($n=362$) or type 3 ($n=190$) FGM. Sixty-two women were classified as having type 1 FGM and five women were classified as having type 4 FGM. Five studies used the World Health Organization (WHO) subtype clarifications of 2a, 2b, 3a, 3b and 3c.[52] One study divided the groups of women into 'type 2 with pseudoinfibulation' and 'type 2 without pseudoinfibulation', with no clear anatomical description to explain what was meant by 'pseudoinfibulation'.[3]

3.3 | Model of care

The model of care is defined as the system designed to organise and provide services, ideally including the best practices for the patient as they move through the stages of intervention/treatment.[53,54]

3.3.1 | Motivations and domains for seeking surgical reconstruction after FGM

Of the 40 included studies, 38 reported the reasons for women seeking reconstruction. The main factors were sexual function 70% (28/40), anatomy/cosmetic appearance 38% (15/40), body image 28% (11/40) and pain 28% (11/40). These were followed by psychological status 13% (5/40), emotional well-being 5% (2/40), body integrity and 'feeling whole' 3% (1/40), reconciliation with the past 3% (1/40), relationships 3% (1/40) and self-esteem 3% (1/40).

3.3.2 | Referral routes

Of the 40 studies included, 22.5% (9/40) of the patients were self-referred and 15% (6/40) had a 'mixed' referral pathway (e.g. self, GP lead and referred by other specialists), whereas 62.5% (25/40) did not specify the referral pathway through which the patients accessed the reconstructive service.

3.3.3 | Care pathways

The preoperative appointment schedule in 40% (16/40) of the studies involved a multidisciplinary team (MDT) approach, including surgeons, midwives, psychologists, psychiatrists and sexual counsellors. In 7.5% (3/40) of the studies, surgery was performed after only one appointment with the surgical team. The number of appointments was not specified in 52.5% (21/40) of the studies. Psychosexual counselling was noted in 37.5% (15/40) of the studies. However, it is unclear how many were offered therapy versus how many had therapy: for example, one study involving 30 women noted that this was arranged when requested,[18] whereas another study advised all 32 participants of the importance of sexual counselling but did not provide this service.[35] The CeMAViE (Centre Médical d'Aide aux Victimes de l'Excision) service describes a model of care that involves five mandatory sessions of psychosexual counselling for women to be eligible for free government-funded CR.[21]

3.3.4 | Eligibility criteria

The criteria for deeming a patient eligible for surgery were highly variable and ranged from 'patient being able to sign an informed consent' to MDT agreement that a patient was suitable to proceed with reconstruction.

3.3.5 | Reasons for not offering reconstructive surgery following FGM

The majority (77.5%, 31/40) of the studies did not specify reasons not to offer surgery to specific patients or this inclusion criterion was not applicable to the study (i.e. only patients who underwent surgery were included in the analysis).

In 12.5% (5/40) of the studies, reconstruction surgery was not performed after the initial counselling because of the patient's decision not to proceed; in 10% (4/40) of the studies,

TABLE 1 Study characteristics.

	Lead author	Year published	Type of publication	Country of study/authors	Level of evidence	No. of study participants	No. after duplicates removed	Start date	End date	Study funding
1	Abdulcadir[12]	2017	Journal article	Switzerland	5	1 woman (duplicated in study 16)	0	NS	NS	NS
2	Abdulcadir[13]	2012	Abstract	France	4	74 women	74	April 2010	April 2011	NS
3	Abdulcadir[14]	2015	Journal article	Switzerland	5	2 women (1 duplicated in study 16)	1	NS	NS	NS
4	Abdulcadir[15]	2017	Journal article	Switzerland	4	7 women (3 duplicated in study 16)	4	April 2010	June 2016	NS
5	Abdulcadir[16]	2017	Abstract	Switzerland	4	6 women	6	NS	NS	NS
6	Abdulcadir[17]	2022	Info. on clinical trials register	Switzerland	2	35 women	35	Nov 2021	Aug 2022	NS
7	Abramowicz[18]	2015	Journal article	France	3	30 women	30	2007	2015	NS
8	Almadori[19]	2022	Book chapter	UK	4	5 women	5	NS	NS	NS
9	Bah[20]	2021	Journal article	France, Belgium, Switzerland	4	32 surgeons in 14 countries	0	2020	2020	NS
10	Caillet[21]	2018	Journal article	Belgium	5	NS	0	NS	NS	NS
11	Chang[22]	2017	Journal article	USA	5	3 women	3	April 2015	Dec 2016	NS
12	Christopher[23]	2022	Journal article	USA	4	19 women	19	2016	2021	NS
13	Diouf[24]	2017	Journal article	Senegal	4	14 women	14	NS	NS	NS
14	Dugast[25]	2017	Journal article	France	4	27 women	27	Feb 2011	July 2015	NS
15	Fazari[26]	2012	Abstract	Sudan	4	3750 women	3750	Jan 2005	June 2010	NS
16	Fazari[27]	2013	Journal article	Sudan	5	1 woman	1	NS	NS	NS
17	Foldès[28]	2006	Journal article	France	4	453 women (all duplicated in study 29)	0	1992	2005	NS
18	Foldès[3]	2012	Journal article	France	4	2938 women	2938	Jan 1998	Dec 2009	French Urology Assoc.
19	Henning[29]	2017	Abstract	Canada	4	25 women	25	July 2012	October 2015	NS
20	Jordal[30]	2018	Abstract	Sweden	4	19 women	19	NS	NS	NS
21	Jordal[31]	2021	Journal article	Sweden	4	18 women (all duplicated in study 31)	0	2016	2019	NS
22	Karim[32]	2022	Journal article	Netherlands	4	72 women	72	Jan 2010	Jan 2021	NS
23	López-Olmos[33]	2015	Journal article	Spain	5	1 woman	1	NS	NS	NS
24	Madzou[34]	2020	Journal article	France	3	84 women	84	October 2005	June 2017	NS
25	Manero[35]	2018	Journal article	Spain	4	32 women	32	Jan 2013	Dec 2016	NS

TABLE 1 (Continued)

	Lead author	Year published	Type of publication	Country of study/authors	Level of evidence	No. of study participants	No. after duplicates removed	Start date	End date	Study funding
26	Manin[36]	2021	Journal article	Switzerland	5	1 woman	1	NS	NS	NS
27	Merckelbagh[37]	2015	Journal article	France	3	169 women	169	Jan 2006	Dec 2011	NS
28	Mestre-Bach[38]	2019	Journal article	Spain	5	1 woman (1 duplicated in study 40)	0	NS	NS	Private foundation
29	Mestre-Bach[39]	2018	Journal article	Spain	4	27 women	27	NS	NS	NS
30	O'Neill[40]	2021	Journal article	Belgium	5	2 women	2	2017	2020	
31	Ouédraogo[41]	2016	Journal article	Burkina Faso	4	68 women	68	26 Feb 2014	25 Feb 2017	NS
32	Ouédraogo[42]	2012	Journal article	Burkina Faso	4	94 women	94	2007	2010	NS
33	Quilichini[43]	2010	Journal article	France	5	1 woman	1	NS	NS	NS
34	Seif-Eldin[44]	2013	Abstract	Egypt	4	14 women	14	NS	NS	NS
35	Tayebaly[45]	2018	Abstract	Sudan	5	2 women	2	NS	NS	NS
36	Thabet[46]	2003	Journal article	Egypt	3	147 women	147	2000	2003	NS
37	Tognazzo[47]	2022	Journal article	Switzerland	4	5 women	5	2019	2020	NS
38	Villani[48]	2012	Abstract	France	5	NS	0	NS	NS	NS
39	Vital[49]	2016	Journal article	France	4	12 women	12	Dec 2013	Dec 2014	NS
40	Wilson[50]	2021	Journal article	Egypt	4	40 women	40	Dec 2018	Aug 2020	NS

Abbreviation: NS, not specified.

TABLE 2 Sociodemographic characteristics, total number of interventions and costs of treatment.

	Lead author	Total no. of women who had intervention	Ethnicity/country of origin	Age (years)	Age mean (SD)	Type of FGM	Treatment provided by public health system, charity or private care
1	Abdulcadir[12]	1/1 had CR by Foldes' technique	Ivory Coast	21	NS	Type 2c ($n=1$)	Cost of clitoral surgery refunded by Swiss health insurance
2	Abdulcadir[13]	1/74 had CR	Eritrea, 25 (34%); Somalia, 21 (28%); Sudan, 6 (8%)	NS	'Average – 30 years'	Type 3 ($n=57$, 77%) Type 2 ($n=9$, 12.2%)	Cost of clitoral surgery refunded by Swiss health insurance
3	Abdulcadir[14]	2/2 had CR	Burking Faso Somali	39 34	Median, 36.5	Type 2c ($n=1$) Type 3a ($n=1$) previously deinfibulated	Cost of clitoral surgery refunded by Swiss health insurance
4	Abdulcadir[15]	6/7 had CR; 1/7 had deinfibulation with excision of clitoral mass	Somali $n=2$ Burkino Faso $n=2$ Ivory Coast $n=2$ Mali $n=1$	25, 38, 38, 21, 49, 34, 34	Mean, 34	Type 3c ($n=1$) Type 2c ($n=2$) Type 3a ($n=3$) Type 2c–3a ($n=1$)	Cost of clitoral surgery refunded by Swiss health insurance
5	Abdulcadir[16]	3/6 had surgical excision of clitoral cyst; 2/6 had deinfibulation with labia minora reconstruction; 1/6 had CR	NS	NS	NS	Type 1/2 ($n=4$) Type 3 ($n=2$)	Cost of clitoral surgery refunded by Swiss health insurance
6	Abdulcadir[17]	35 total One group had reconstruction + psychosexual support ($n=$NS) Control group with psychosexual support only ($n=$NS)	NS	NS	NS	NS	Cost of clitoral surgery refunded by Swiss health insurance
7	Abramowicz[18]	30/30 had CR by Foldes' technique	Fulani, 9 (West African descent); Soninke, 7 (West African descent); not recorded, 14	NS	Median, 19 Range, 13–29	Type 1 ($n=4$) Type 2 ($n=21$) Type 3 ($n=5$)	NS
8	Almadori[19]	5/5 treated with autologous fat grafting	NS	NS	Mean, 29.4 (±4.2)	Type 1 ($n=1$) Type 2 ($n=2$) Type 3 ($n=2$)	Italian Public Health System or Charity; NHS
9	Bah[20]	NS	NS	NS	NS	NS	NS
10	Caillet[21]	NS	NS	NS	NS	NS	CR reimbursed by Belgian social security (since 2014)
11	Chang[22]	3/3 had 'clitoral restoration'	Sierra Leone	NS	Median, 32.3 Range, 30.0–33.8	Type 2 ($n=3$)	NS
12	Christopher[23]	19/19 had reconstruction	NS	NS	Median, 33.5	Type 2 ($n=18$, 94.7%) Type 1 ($n=1$) 1 woman had inclusion cyst + FGM	NS

TABLE 2 (Continued)

	Lead author	Total no. of women who had intervention	Ethnicity/country of origin	Age (years)	Age mean (SD)	Type of FGM	Treatment provided by public health system, charity or private care
13	Diouf[24]	10/14 had cystectomy; 2/14 had deinfibulation and 1/14 had deinfibulation + clitoroplasty; 1/14 had clitoroplasty	Pular or Mandingo groups from Senegal	NS	23.2 (14–38)	Type 2 ($n = 10$, 69%) Type 3 ($n = 4$, 28.5%)	NS
14	Dugast[25]	10/27 had reconstruction alone; 9/27 had surgery + sexology; 8/27 had sexology alone	All were 'natives of Africa', with the majority from Guinea	NS	Average, 30	Type 2 ($n = 19$, 70%) Others = NS	NS
15	Fazari[26]	3750/3750 had reconstructive surgery	NS	NS	NS	NS	NS
16	Fazari[27]	1/1 had mass excision + reconstruction	Sudan	24	NA	Type 3 + large inclusion cyst ($n = 1$)	–
17	Foldès[28]	453/453 had CR	NS	NS	Median 29.65 ± 7.6 Range, 18–63	'Type 2 or Type 3' ($n = 453$)	–
18	Foldès[3]	2938/2938 had CR (21 needed pseudocyst removed before surgery)	'Main countries of origin were Mali, Senegal, and Ivory Coast. But also women from Egypt, Ethiopia, and Djibouti'	NS	Mean, 29.2 (7.77)	Type 2 + pseudoinfibulation ($n = 1762$, 60%) Type 2 without pseudoinfibulation ($n = 1030$, 35%) Type 3 + clitoral excision ($n = 146$, 5%)	French publicly funded healthcare system
19	Henning[29]	25/25 had CR	NS	NS	NS	NS	NS
20	Jordal[30]	19/19 had CR	NS	NS	NS	NS	NS
21	Jordal[31]	18/18 had CR	Somalia ($n = 9$), Eritrea ($n = 3$), Gambia ($n = 2$), Iraq ($n = 2$), Senegal ($n = 1$), Sierra Leone ($n = 1$)	NS	21–58	Type 1 ($n = 2$) Type 2 ($n = 6$) Type 3 ($n = 10$), 7 that had been previously deinfibulated	CR introduced into public health care in 2014
22	Karim[32]	45/72 had CR	'All patients had immigrated from sub-Saharan Africa or the Middle East'	NS	Mean, 34.2 (±8.44) Range, 18–53	Type 1 ($n = 5$, 6.9%) Type 2 ($n = 17$, 23.6%) Type 3 ($n = 45$, 62.5%) Type 4 ($n = 5$, 6.9%)	NS
23	López-Olmos[33]	1/1 had CR	Mali	26	N/A	Type 1	NS
24	Madzou[34]	28/84 had CR prior to 1st vaginal delivery 56/84 in control group – women with FGM + 1st vaginal birth	West Africa, 17 (60.7) East Africa, 11 (39.3)	N/S	30 (23–42)	Type 2 ($n = 18$, 64.3%) Type 3 ($n = 10$, 35.7%)	NS
25	Manero[35]	32/32 had clitoro-labial reconstruction with vaginal graft transposition	Guinea Bissau, $n = 30$ Cut in Spain, $n = 2$	NS	Median, 35 Range, 26–42	Type 1, 13% Type 2, 78% Type 3, 9%	NS
26	Manin[36]	1/1 had CR + A-PRP	Guinea	36	N/A	Type 2b	NS

(Continues)

TABLE 2 (Continued)

	Lead author	Total no. of women who had intervention	Ethnicity/country of origin	Age (years)	Age mean (SD)	Type of FGM	Treatment provided by public health system, charity or private care
27	Merckelbagh[37]	61/169 had CR	Mali, $n=69$ (41%) Senegal, $n=34$ (20%) Ivory Coast, $n=21$ (12%)	NS	Median, 28.5 Range, 18–56	NS	NS
28	Mestre-Bach[38]	1/1 had CR	Ethiopia	26	N/A	Type 2 ($n=1$)	CR financed by a private foundation
29	Mestre-Bach[39]	27/27 had reconstruction + psychological support and sexual counselling	Africa, 25 (92.6%) Europe, 2 (7.4%)	NS	Mean, 27.1 (7.85)	Type 1 ($n=6$, 22.2%) Type 2 ($n=21$, 77.8%)	Funded by a charitable foundation
30	O'Neill[40]	0/2 had surgery; both had psychotherapy and sexual therapy	Guinea Senegal	42, 47	Mean, 44.5	Type 1 ($n=1$) Type 2 ($n=1$)	–
31	Ouédraogo[41]	68/68 had CR	Burkino Faso	NS	Mea, 33.5 ± 7.4 Range, 20–48	Type 2 (excision) ($n=1$)	–
32	Ouédraogo[42]	94/94 had CR by Foldes' technique	Burkino Faso		32.3 (18–49)	Type 2 ($n=89$, 94.7%) Type 3 ($n=5$, 5.3%)	–
33	Quilichini[43]	1/1 had CR by Foldes' technique	Burkino Faso	35	NA	Type 2 (excision)	–
34	Seif-Eldin[44]	14/14 women had deinfibulation, clitoral and clitoral hood reconstruction	Egypt		Mean, 26.2 Range, 18–35	NS	NS
35	Tayebaly[45]	1/2 had cyst removal + CR performed by a surgeon; 1/2 had cyst removal + CR performed by a Sudanese surgeon	Eritrean Sudan	NS	NS	Type NS – both patients had FGM with large clitoral inclusion cyst ($n=2$)	NS
36	Thabet[46]	30/147 in control group (no FGM); 30/147 minorly circumcised (types 1–2); 30/147 FGM type 2 and 3; 57 with clitoral cysts (30 women had CR)	NS	NS	NS	Type 1 ($n=34$) Type 2 ($n=51$) Type 3 ($n=32$)	–
37	Tognazzo[47]	5/5 had CR + A-PRP	Guinea Senegal, $n=2$ Somalia Mali	35, 51, 27 39, 43	NS	Type 2b (previous 3b) ($n=2$) Type 3a ($n=3$)	Costs of surgery refunded by Swiss health insurance
38	Villani[48]	NS	NS	NS	NS	NS	NS
39	Vital[49]	12/12 had CR	Burkina Faso, 1 (8%) Guinea, 9 (75%) Senegal, 1 (8%) Sierra Leone, 1 (8%)	NS	Median, 31 IQR, 27–36	Type 1 ($n=3$, 25%) Type 2 ($n=9$, 75%)	Free since 2004
40	Wilson[50]	40/40 CR + coverage with sensate labial flaps donated by remnant of the labia minora	Egypt	NS	Mean, 27.27 Range, 19–42	Type 2 ($n=34$) patients Type 3 ($n=6$) patients	NS

Abbreviations: A-PRP, autologous platelet-rich plasma; CR, clitoral reconstruction; FGM, female genital mutilation; NA, not applicable; NS, not specified.

surgery was not performed as it was deemed unnecessary by the clinical team or owing to other medical concerns.

3.3.6 | Surgical team

The surgeons performing CR were most frequently gynaecologists (65%), followed by plastic surgeons (20%) and urologists (5%). Four studies (10%) did not specify the type of surgeon who performed the procedure.

3.3.7 | Type of reconstruction

The majority (95%, 38/40) of the included studies consisted of CR, mostly using Foldes' technique or its variations. Wilson described CR and coverage with a sensate labial flap,[50] and Manero described clitoro-labial reconstruction with vaginal graft transposition.[35] One study involved only labia minora reconstruction (2.5%),[27] and one study addressed vulval scars post-FGM that were treated with autologous fat grafting to the clitoris/labia minora/labia majora (2.5%).[19] CR was performed in association with labial reconstruction or deinfibulation in 25% of the cases, with the removal of clitoral cysts in 12.5% of the cases, and in two studies combined with platelet-rich plasma (PRP) to ameliorate postoperative clitoral epithelisation (5%). The following types of anaesthesia were used intraoperatively: general (30%), spinal (12.5%), conscious sedation (2.5%), local (5%) and pudendal nerve block (2.5%). The remaining studies did not specify the type of anaesthesia used.

3.3.8 | Postoperative care

The postoperative treatment plan included the use of one or more of the following: analgesics (specified in 15% of the studies), antibiotics (15%), disinfectants/antiseptics (7.5%), sexual counselling (5%), lidocaine/bacitracin ointment (5%), steroid hormone cream (2.5%) and anticoagulants (2.5%). Some authors recommended bed rest for a few days with a catheter in situ (2.5%), being signed off work for up to 17 days (2.5%), low activity for several days (2.5%), or generally provided patients with advice on self-care and/or wound dressing. The follow-up period ranged from 6 weeks to 5 years, with the majority of studies (17, 42.5%) having a follow-up period of 3–12 months.

3.4 | Outcomes

3.4.1 | Effectiveness

Over the course of 40 studies, 7274 women underwent reconstructive surgery. Among them, 94% (6858) were reported as 'improved' after surgery. The improvement rate varied across studies, with an average of 90% (±0.15%), ranging from 46% to 100%. The reported improvement rate was 100% in 16 studies.

Six studies did not specify the domain of improvement for a total of 3862 patients (56% of the improved women). In the remaining studies including 2996 patients (44% of the improved women), improvements were reported in the following domains: sexual function 35% (1121 improved out of 3205 assessed), pain 20% (102 improved out of 506 assessed), body image 69% (25 improved out of 36 assessed), vulval appearance as assessed by the women 64% (89 improved out of 139 assessed), vulval appearance as assessed by the doctors 93% (2765 out of 2975 assessed), intimate relationships 76% (25 improved out of 33 assessed) and self-esteem 78% (35 improved out of 45 assessed) (Table 3).

In one study including 28 women who underwent CR, the main outcome assessed the labour-associated risk in survivors of FGM who underwent reconstruction, compared with a control group of 56 women who did not undergo reconstruction. They found that women in the reconstruction group required significantly fewer episiotomies (5/17, 29.4%) than women in the control group (28/44, 63.6%) ($P = 0.02$), indicating that CR could reduce the risk of episiotomy (OR 0.15, 95% CI 0.04–0.56, $P < 0.01$). In the CR group, 47% of patients had an intact perineum after delivery, compared with 20.4% in the control group ($P = 0.04$). Thus, CR can increase the odds of having an intact perineum at birth by 3.46 times (95% CI 1.04–11.49, $P = 0.04$).[34]

3.4.2 | Complication rate

Complications were reported in 35% (14/40) of the studies, with a complication rate of 3% (207 complications out

TABLE 3 Domains for seeking surgical reconstruction and improvement after reconstruction.

Domain	No. of studies	Patients assessed	Patients improved	%
Sexual function	14	3205	1121	35%
Pain	7	506	102	20%
Body image	2	36	25	69%
Vulval appearance (patient assessed)	6	139	89	64%
Vulval appearance (clinician assessed)	5	2975	2765	93%
Intimate relationship	2	33	25	76%
Self-esteem	1	45	35	78%

of 7274 women operated upon). Reported complications included wound or suture dehiscence (2.14%), haematoma (2.13%), wound infection (0.19%), re-adhesion of the clitoris (0.03%), partial clitoral necrosis (0.02%), pain (0.02%), post-traumatic stress disorder (0.02%), keloid scarring (0.01%), hyperaesthesia (0.01%), UTI (0.01%) and acute urinary retention (0.01%) (Table 4).

3.4.3 | Assessment tools

There was wide variability in the methods used to assess outcomes (Table 5). Validated tools were used only in seven of the 40 studies (17.5%). The most used tool was the Female Sexual Function Index (FSFI),[55] which was adopted in six studies (15%). It consists of six domains: desire, arousal, lubrication, orgasm, satisfaction and pain. In one of these domains the scale was adapted to FGM (2.5%), but this revision has not been validated. Other validated tools included: the Female Genital Self-Image Scale,[56] assessing female genital self-image (FGSIS) ($n=4$, 10%); the Female Sexual Distress Scale (FSDS),[57] assessing distress associated with sexual life ($n=2$, 5%); and the Vulvar Architecture Scoring System (VASS),[58] assessing the extent of anatomical involvement, including the presence of scar tissue ($n=1$, 2.5%). Among the non-validated assessment tools, there were scales such as the Foldès scale (5%),[3,18,28] and the Kasr El Aini sexual questionnaire (2.5%),[46] which are Likert scales including general questions about identity, pain, clitoral sensation, sexual function, sexual response and vulval appearance.

4 | DISCUSSION

4.1 | Main findings

Information regarding the model of care was variable, focusing on heterogeneous aspects of patient care. For instance, more than half of the studies (62.5%) did not specify the referral pathway through which women accessed reconstructive services. The MDT was the primary model of care in the majority of studies, with a minimum team of a surgeon and a mental health professional.

Access to psychosexual therapy input appears to have a major impact upon the treatment ultimately received: nearly 25% of candidates did not proceed with surgery owing to increased self- and/or sexual satisfaction. Therefore, the psychosexual component is extremely important, and we suggest that this should always be incorporated into care pathways for survivors of FGM potentially undergoing reconstruction, to avoid unnecessary treatment and related costs.

Regarding the surgical outcomes, the results from the included studies are encouraging. The main domains for seeking reconstruction were sexual function, anatomy/cosmetic appearance, body image and pain. The outcome assessments in this review suggest an overall improvement in all of these domains. The highest was reported in the anatomical vulval appearance, rated as improved by 93% of doctors and 64% of patients. The difference in these figures might be linked to the level of anatomical knowledge of the vulval region. Doctors tend to be more satisfied with the improvement, compared with women, probably because their assessment is based on an objective external evaluation of the anatomical structures, whereas a woman's evaluation might be influenced by their ideal standards for genitals. This is in accordance with recent research on vulval anatomical variations and satisfaction with appearance after surgery in the female population at large (not FGM).[60]

Overall, the improvement in sexual function was only 35%, despite being the main motivator for surgery. This might be linked to multiple factors, including unrealistic expectations or short-term follow-up, which did not allow for the complete resumption of sexual function in all participants. Despite the relatively lower improvement in sexual function (35%) compared with other domains, other aspects directly related to sexual function improved considerably, such as intimate relationships (76%), self-esteem (78%) and body image (69%). These results are encouraging because it is now well established that sexual function is not only related to an

TABLE 4 Complication rates.

Complication	No. of studies	No. of complications	%
Haematoma	5	164	2.13%
Wound infection	4	15	0.19%
Urinary tract infection	1	1	0.01%
Acute urinary retention	1	1	0.01%
Wound/suture dehiscence	3	165	2.14%
Readherence/readhesion of clitoris	2	3	0.03%
Partial necrosis	1	2	0.02%
Keloid on operative scar	1	1	0.01%
Hyperaesthesia	1	1	0.01%
Post-traumatic stress disorder	2	2	0.03%
Pain	2	2	0.02%

TABLE 5 Use of validated and non-validated tools to assess outcomes.

	Validated questionnaire/scale			Non-validated questionnaire/scale		Other	
	Sexual function	Urinary function	Vulval appearance	Psychological status	Interview	Scales	Sexual dysfunction
Patient-reported	FSFI, $n=6$ (revised, $n=1$) FSDS, $n=2$ (revised, $n=1$)	Urination urgency in women, revised, $n=1$	FGSIS, $n=4$	Symptom checklist 90-R, $n=1$ Beck's Depression Inventory, $n=1$ WHO-5 well-being index, $n=1$	Identity, $n=3$ Pain, $n=4$ Clitoral sensation, $n=1$ Sexual function, $n=2$ Satisfaction with sexual counselling, $n=1$ Satisfaction with multidisciplinary care, $n=1$ Satisfaction with CR, $n=1$ Satisfaction with psychosexual care, $n=1$ Sexual response, $n=1$ Vulval appearance, $n=2$	Foldès' scale, $n=1$ Kasr El Aini sexual questionnaire, $n=1$	Classification according to DSM5, $n=2$
Doctor-reported	–	–	VASS, $n=1$	–	Improved/not improved, $n=4$	–	–
Not specified	–	–	–	–	–	Interview, $n=13$	Likert scale 0–10, $n=8$
Histology	–	–	–	–	–	–	Neuroma (total of 12 patients in six studies) Clitoral cyst (total of 9 patients in three studies)

Abbreviations: CR, clitoral reconstruction; DSM, Diagnostic and Statistical Manual of Mental Disorders; FGSIS, Female Genital Self-Image Scale; FSDS, Female Sexual Distress Scale; FSFI, Female Sexual Function Index; WHO, World Health Organisation.

intact or functioning anatomy; other important aspects play a critical role, such as high body esteem and a low frequency of distracting thoughts during sexual activity.[61] In fact, research has shown that chronic critical attentiveness to one's body may interfere with sexual activity and hinder female sexual function.[62] Negative genital perceptions can also have a detrimental impact on sexual well-being,[63] and poor genital image is associated with higher genital self-consciousness during sexual activities and, in turn, associated with lower sexual esteem and sexual satisfaction.[60] However, clitoral sensation was not objectively assessed before and after surgery in any of the studies.

The overall complication rate reported in the included studies was 3%, lower than the overall postoperative complication rate reported for other gynaecological surgeries (3.7%).[64]

Language is a powerful tool to convey positive, inclusive and empowering messages. The inaccurate use of vocabulary can cause misunderstandings and misconceptions. For instance, the term 'survivor' is preferred to 'victim' because it acknowledges the violence that a woman has been through, but also avoids re-victimisation and strongly emphasises her active role in overcoming this violence. Similarly, the word 'restore' when referring to surgical reconstruction should be avoided, because it can be misleading and create false expectations.

4.2 | Strengths and limitations

This study represents the first scoping review on this subject. Its main strength is that it shows that the results of surgical reconstruction in survivors of FGM are encouraging, with 6858 out of 7274 (94%) women undergoing reconstruction reported as 'improved', and with a relatively low complication rate (3%). One of the main limitations was the high heterogeneity of the outcome assessment. Only a limited number of studies have adopted validated tools, which is an issue of great concern. The scientific community should strive to identify a core outcome set (COS), implementing validated tools when reporting the results of reconstructive surgery in survivors of FGM. Questionnaires should be adapted to FGM and validated to increase their appropriateness for the assessment of this cohort of women.

4.3 | Interpretation

Female genital mutilation (FGM) is an issue of increasing concern worldwide, including in countries of the diaspora. Multiple surgical techniques are available to reinstate the form and function of the external genitalia for survivors of FGM, including CR (alone or combined with labia minora reconstruction). Similar techniques are available in public health systems, such as the National Health Service (NHS) in the UK, for multiple other clinical scenarios (i.e. for lichen sclerosus, gender reassignment surgery or post-cancer vulval surgery), yet women with FGM cannot access these reconstructive techniques in certain high-income countries, and this can be seen as discriminatory.

There is evidence that an increasing number of UK-based women with FGM seek reconstructive surgery abroad.[4,6] The lack of access to and/or poor postoperative care after surgery can lead to patients attending public health systems for the management of postoperative complications. A recent UK-based study highlighted the costs of 'surgery tourism' on the NHS as between £862 and £10,520 per patient.[59] Therefore, the option of surgical reconstruction should be further explored and ultimately offered to survivors of FGM, not only to reduce health inequality for survivors of FGM but also because of its potential cost-effectiveness.

This scoping review will contribute towards developing a model and assessment of care for survivors of FGM seeking reconstructive surgery, and the design of a future clinical trial. We are planning: (i) working with patient and public involvement (PPI) to co-design the model of care, ensuring that survivors of FGM are involved in the development of future services; and (ii) to identify a COS, with the help of experts and stakeholders.

4.4 | Recommendations for future research

- Psychosexual counselling and anatomical education is essential for supporting survivors of FGM during their reconstructive journey. In future research, this component should be incorporated into care pathways for survivors of FGM potentially undergoing reconstruction and should be assessed with validated tools.
- A consensus in outcome assessment should be achieved to allow comparison of the results among different study groups in future meta-analyses. The scientific community should identify a COS when reporting the results of reconstructive surgery in survivors of FGM. Furthermore, questionnaires should be adapted to FGM and validated to increase their appropriateness in this cohort of women.
- As there is currently a high variety of reported characteristics among different studies, we suggest minimum criteria for reporting information in FGM reconstructive studies that will allow comparison in future systematic reviews and meta-analyses (Table 6).

5 | CONCLUSION

This scoping review shows that reconstructive surgery improves quality of life, satisfaction with vulval appearance and sexual function in survivors of FGM. However, the level of evidence is low and more research is urgently needed. The encouraging results highlighted from the articles included in this review show that further testing in a clinical trial is warranted.

TABLE 6 Recommended minimum criteria for future studies reporting on reconstruction for female genital mutilation (FGM).

Sociodemographic information	• Age (mean with standard deviation) • Ethnic origin (rather than country of origin) • WHO description of FGM type
Model of care	• MDT • Psychosexual therapy (including how many took up psychosexual counselling)
Pre- and postoperative management	• Analgesia • Antibiotics • Wound dressing • Self-care
Surgical technique (description of the technique in correlation with the type of FGM)	• Clitoral • Labial • Clitoral + labial • Other • Type of FGM
Outcome assessment (with validated tools)	• Patient-based • Physician-based • Other qualitative/quantitative
Effectiveness and safety	• Effectiveness • Complications rate • Complication grade

AUTHOR CONTRIBUTIONS

Conception: AA, JA, CC, CE and SE. Planning: AA, JA, CC, CE and SE. Carrying out and analysing the work: AA, JA, SP, CE and CC. Writing up the work: AA, JA, SP, CC, CE and SE.

ACKNOWLEDGEMENTS

Literature search: David Green, NHS Royal Free London Library Services, helped to develop the search strategies. Steering committee members: Juliet Albert – Specialist FGM Midwife, The Sunflower Clinics, Imperial College Healthcare NHS Trust; Sohier Elneil – Consultant Uro-Gynaecology and FGM expert, University College London Hospitals NHS Foundation Trust; Aurora Almadori – Plastic Surgeon with a specialist interest in Vulval Reconstruction, Royal Free Hospital NHS Foundation Trust; Catriona Stalder – Gynaecologist, Imperial College Healthcare NHS Trust; Tina Rashid – Urologist and Gender Reassignment/Feminising Surgeon, St George's Hospital Foundation NHS Trust; Roland Morley – Urologist and Gender Reassignment/Feminising Surgeon, Imperial Healthcare NHS Trust and St George's Hospital Foundation NHS Trust; 'KM' – Anonymous FGM Survivor; Suhad Adam – FGM Health Advocate, The Sunflower Clinic, ICHNT; Christie Coho – Specialist FGM Psychotherapist; Huda Mohamed – FGM Midwife, Whittington Hospital; Alison Byrne – FGM Midwife, University Hospitals Birmingham and Sandwell & West Birmingham Hospital Trust; Vicky Bowler – GP, Bristol Rose Clinic; Catrin Evans – Academic FGM expert, University of Nottingham; Stefania Palmieri – Urogynaecologist, UCLH; Naana Otoo Oyortey – FORWARD; Toks Okeniyi – FORWARD; N'Dey Gassama – founder of Holistic Support Ltd; Astrid Fairclough – Churchill Fellow/Policy Advisor; Dalia Saidan – Consultant Urogynaecologist, Croydon University Hospital; Hekate Papadaki – Manor Gardens; Honorary member – Dr Jasmine Abdulcadir (Hôpitaux Universitaires Genève, Geneva, Switzerland).

FUNDING INFORMATION

Funding was awarded by the British Urology Foundation, Nurse and/or Clinician-led Small Research Projects 2022 for the further development of this project. Funding for open-access publications was provided by University College London.

CONFLICT OF INTEREST STATEMENT

The authors have nothing to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS APPROVAL

Not applicable for a scoping review.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Almadori A, Palmieri S, Coho C, Evans C, Elneil S, Albert J. Reconstructive surgery for women with female genital mutilation: A scoping review. BJOG. 2024;131(12):1604–1619. https://doi.org/10.1111/1471-0528.17886