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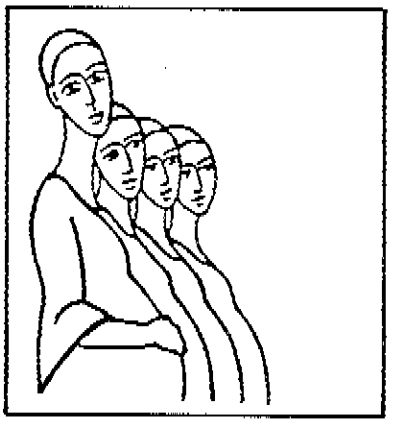

THE PREVENTION AND TREATMENT OF OBSTETRIC FISTULAE

Report of a Technical Working Group

Geneva, 17-21 April 1989

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CONTENTS

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ACKNOWLEDGMENTS

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1. PREFACE

The Safe Motherhood Initiative (SMI) is a global effort to reduce maternal mortality and morbidity. The target is to reduce maternal deaths by at least half by the year 2000 and to achieve substantial reductions in maternal morbidity. Activities within the Initiative take many forms: increasing awareness of the nature of the problem and the need for action; strengthening maternal health services; training of health workers and others; facilitating educational and economic opportunities for women, and research, particularly operational research. All these measures which will help to reduce maternal mortality will also exert at least equal effect on maternal morbidity which derives from the generally poor health of women and girls and inadequate care during pregnancy and labour.

In order to be able to provide more effective support to countries in technical fields WHO has been holding a series of meetings and consultations with experts in a variety of subjects relating to maternal health. Their task is to review current knowledge and experience of a given high priority topic, produce guidelines and, if necessary, to recommend needed epidemiological and operational research. Some technical groups have already produced guidelines such as "Studying maternal mortality in developing countries" [1] and "Essential obstetric functions at first referral level"[2]. One working group has prepared guidelines and protocols for studies to assess the effectiveness of the partograph. Another working group has studied the prevention and management of postpartum haemorrhage and another the measurement of the prevalence of reproductive morbidity.

This Technical Working Group on the prevention and treatment of obstetric fistulae is part of the effort to provide more effective support to countries, particularly in areas where WHO has a unique contribution to make in norm-setting and the establishment of agreed standards.

A companion document to this report of the Technical Working Group on obstetric fistulae is in preparation. It will consist of a review of available information about the aetiology and prevalence of obstetric fistulae and their treatment and prevention. The items quoted in Annex 3 of this report have been drawn from that document.

2. INTRODUCTION

Worldwide concern about maternal health in developing countries has so far concentrated on the reduction of maternal mortality. However, attention also needs to be given to serious complications of childbirth which are not fatal, the most disabling of which is obstetric fistula. Having been virtually eliminated in most of the world, this problem is still all too common in some developing regions such as sub-Saharan Africa and parts of the Indian subcontinent.

An informal meeting of experts with relevant experience in these regions was therefore convened in Geneva. The objectives of the meeting were to:

1. review the epidemiology of obstetric fistula and estimate its prevalence in various parts of the world, identifying places where the prevalence is likely to be high but where its exact magnitude is not known;

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[1] Studying maternal mortality in developing countries - a guidebook, Geneva, 1987, WHO/FHE/87.7

[2] Essential obstetric functions at first referral level, Geneva, 1986, FHE/86.4

2. advise on measures required to prevent the occurrence of obstetric fistula;

3. advise on the strategy required to reduce the number of women suffering from this condition who do not at present receive appropriate surgical treatment;

4. advise on the facilities and trained staff required to deal with the accumulation of cases, and how resources should be mobilized for this from within the countries concerned and from international organizations;

5. identify issues into which research is required.

The meeting was opened by Dr Godfrey Walker (Manager, Safe Motherhood Research programme) and Dr Mark Belsey (Chief, Maternal and Child Health). Dr John Lawson was selected as Chairman and Dr Margaret Murphy as Rapporteur. A list of the participants is attached to this report (Annex 1).

Background papers were provided by Professor Ahmed, Professor Harrison, Dr Lawson, Professor Shah and Dr Tahzib. Brief summaries of these and of the oral presentations at the Meeting are contained in Annex 2 of this document.

3. THE AETIOLOGY OF OBSTETRIC FISTULAE

3.1 Physical factors

Obstructed labour. Prolonged and unrelieved pressure of the presenting part of the foetus against the maternal pelvic wall in cases of cephalo-pelvic disproportion is likely to result in necrosis of the intervening vagina and bladder.

Accidental injury to the bladder during an operation to secure delivery such as Caesarean section, difficult forceps extraction, craniotomy or symphysiotomy.

Traditional surgical procedures such as gishiri cut in Northern Nigeria. Scarring from female circumcision may occasionally delay labour long enough to cause a fistula.

Other fistulae related to pregnancy may result from crude attempts at induced abortion.

3.2 Biosocial Factors

Obstructed labour, by far the commonest cause of obstetric fistula, is most often due to a contracted pelvis. This usually results from stunting of growth of the women by malnutrition and untreated infections in childhood and adolescence. Another reason for the pelvis being too small may be a too early start to childbearing, the first pregnancy occurring soon after menarche before growth of the pelvis is complete. In certain endemic areas, osteomalacia may produce secondary pelvic deformity in women who have previously had several successful deliveries.

Cephalopelvic disproportion due to a contracted or deformed pelvis should not lead to difficult labour if it is anticipated prenatally. Even without this, when labour is prolonged at home by disproportion, the stage of obstruction can be avoided by early transfer to hospital and effective treatment there by, for example, abdominal delivery.

4. FACTORS AFFECTING PREVALENCE

4.1 Hierarchy of causes

The causes of obstetric fistulae are, like the causes of maternal deaths, many layered. Behind the medical causes such as obstructed labour or injury to the urinary tract, there are logistic causes - failure in the health system, lack of transport etc. At the root of all these are the social, cultural and political situation of women which together determine the status of women, their health, nutrition, fertility and behaviour.

Socioeconomic underdevelopment is the basic, underlying factor responsible for maternal ill-health, including obstetric fistulae. Inevitably, the general standard of health of an underdeveloped community is low. Natural hazards such as malnutrition and infections are largely unchecked. Health services are deficient or absent, particularly in isolated rural areas.

4.2 Cultural factors

Cultural factors ensure that women are the worst off. Such formal education as may be available seldom reaches them. Early marriage leads to an early start to childbearing, and the absence of family planning results in high parity. In their lowly status these mothers are usually overworked and receive less than their fair share of the family resources.

Cultural factors also add to the risks of childbirth. Even when skilled maternity care is available, utilization may be poor, particularly by women living in traditional seclusion. Confidence in its value is hard to win, so prenatal clinics are poorly attended and delivery is usually conducted at home by elderly relatives or unskilled traditional birth attendants (where this profession exists). The strange environment of a hospital is mistrusted, so transfer there when labour is prolonged may only be as a last resort.

This delay, which is compounded by the need to obtain the sanction of the husband, mother-in-law or village leader, increases the likelihood of a fistula developing.

4.3 Geographical factors

Geographical factors also add to the prevalence of fistulae. In isolated communities, transport to hospital when labour is prolonged may be very difficult. It is no chance, for example, that a large number of the fistula cases treated in Khartoum come from remote rural communities in the Western Region. Social disturbances increase these difficulties, as do wars. For instance, 25 per cent of the fistula cases treated in Peshawar come from war-torn Afghanistan, and elsewhere survivors of previous obstructed labour are commonly brought in from refugee camps for their fistulae to be treated.

5. PREVALENCE

5.1 Underestimation of the extent of the problem

Knowledge of the number of women suffering from obstetric fistulae is limited to those who come to hospital for treatment. This is likely to considerably underestimate the prevalence because few women are aware that their condition is treatable and the social ostracism which is an all too frequent sequel to the injury isolates the women and renders it almost impossible for them to find out about

appropriate care. Few district hospitals have the equipment or the expertise to undertake fistula repair and sufferers living in remote rural areas may be deterred by a long and expensive journey through unfamiliar territory to a hospital staffed by strangers.

5.2 Characteristics of fistula patients

Despite these limitations hospital data do give an indication of the existence of the problem. Hospital statistics show that the prevalence in sub-Saharan Africa is particularly high, from the west coast across the Sahel to the Horn of Africa and southwards to the East and Central African countries. Typically, most of the fistula patients are very young, short-statured primiparae, coming from rural areas where health services are sparse.

5.3 Regions reporting fistulae

In the Indian subcontinent the pattern of prevalence is changing. Twenty or more years ago, gynaecologists all over India were very familiar with obstetric fistulae, but the development of peripheral maternity services and improved communications have greatly reduced the incidence, except in deprived areas such as Bihar. In Nepal, Bangladesh and Northern Pakistan, the prevalence is still high. In contrast to the Nigerian picture, the fistula patient in Peshawar is often a multiparous older woman.

The prevalence of fistulae in other Asian countries, Oceania and South America does not appear to be high. However, in isolated deprived communities where maternity services are few, fistulae are likely to be found. There are reports of obstetric fistulae from several Eastern Mediterranean countries such as Iran and Turkey as well as from Ecuador in South America.

5.4 Improving the quality of data

How to obtain more exact information about the prevalence of fistulae in various countries was discussed at the meeting. The only currently available source appears to be hospital data, in spite of the disadvantages already mentioned. Other social science research techniques, in particular those of medical anthropology, need to be explored in order to better evaluate the extent of the problem. Appropriate research in areas where the prevalence is likely to be high should be community-based, using interviews and discussions among small groups of people at the local level (focus-groups). The difficulty in locating fistula sufferers necessitates different approaches such as using already treated patients to identify other affected women in their areas and other such networking systems.

Postal questionnaires usually produce a poor response but when the method was used to produce information from South-East Asia for the meeting, it was remarkably successful. This was because enquiries were addressed personally to doctors known to be involved in fistula work and the information sought was well defined. Contact with local professional associations of surgeons and gynaecologists should be considered.

Another method would be to appoint researchers in regions where the prevalence is likely to be high to visit the hospitals in each area. They should obtain and analyze information from available records, including surgical operating lists.

6. PREVENTION OF OBSTETRIC FISTULAE

6.1 Long-term and immediate strategies

In the long term, only major social changes will significantly reduce maternal mortality and morbidity, including obstetric fistulae, in regions where they are at present endemic. A major task is to improve the status of women there, including the extension of primary education to them and deferment of marriage (and thus the first pregnancy) until they are fully grown. In the immediate future strategies for preventing obstetric fistulae are essentially similar to those for reducing maternal mortality, though the emphasis may be different. In essence these include improving the nutritional status of women and girls, access to family planning, skilled attendance during childbirth and referral to skilled obstetric care if and when this becomes necessary.

6.2 Improvements in basic maternal health services

The incidence of fistulae can be reduced by making basic maternity services available to an increasing number of women. Such services should aim to identify pregnant women at risk of a difficult delivery. When labour is prolonged, transfer for expert care should be arranged before the stage of obstruction is reached. Transfer and operative delivery of patients with obstructed labour is of paramount importance. This care should be made available in peripheral health centres by ensuring that appropriate facilities and obstetric expertise are available there. It has to be accepted, though, that utilization of such services does not depend solely on ease of physical access, as popular confidence also has to develop.

6.3 Identification of women at risk of developing fistulae

To identify pregnant women at risk, midwives should be taught to select those who are 150 cm or less in height, who, in their first pregnancy, are aged 16 or less (or in case of multiparae those who have a previous history of a difficult labour). These women should be referred to the nearest health centre for delivery. Care should also be taken to identify those grand multiparae who may be at risk of developing fistula if successive pregnancies have resulted in osteomalacia and secondary pelvic deformity.

In places where there are no midwives, if there are professional traditional birth attendants (TBAs) in the community they should be given similar instructions about the identification and referral of women at risk. In either case, patients referred before the onset of labour will require accommodation near the health centre, so maternity waiting homes or hostels should be available there.

In some areas, such as Northern Nigeria, it has been found that if young women are provided with and take antimalarials and folic acid during pregnancy this encourages the completion of their skeletal growth, and thus reduces the risk of dystocia. In other areas, such as Northern Pakistan, protein supplementation of the diet may have the same effect though it may also increase the likelihood of developing pregnancy-induced hypertension. Paradoxically, dietary supplementation may result in an increase in the size of the baby and consequent additional difficulties for the mother. Information about these issues should be included in the training of local midwives.

6.4 Training of medical and health workers

Trained midwives practising domiciliary midwifery or working in village maternity homes should use the partograph to identify delay in the progression of labour indicating the need to transfer the woman to a hospital with skilled obstetric assistance. They should make ongoing local arrangements for motor transport for their referred patients.

TBAs should be taught to send women who are not making progress in labour to the health centre before the stage of obstruction is reached. Where there is no TBA profession, the local community should be educated about the need for mothers to go to hospital when labour is prolonged. To facilitate this, the meeting suggested that research is needed to identify what is the end-point or event during a difficult labour which produces the decision to seek expert assistance.

6.5 First referral

"Centres of first referral" are either district hospitals or peripheral health centres staffed at least by a doctor who can perform a Caesarean section. The basic equipment and skills required are described in Essential Obstetric Functions at First Referral Level[3].

The meeting was informed that even patients delivering after prolonged obstructed labour can in some cases be prevented from developing fistulae by postpartum catheter drainage of the bladder.

7. ACCUMULATION OF UNTREATED FISTULA PATIENTS

7.1 Numbers of fistula sufferers

In areas of high incidence in Sub-Saharan Africa there are large numbers of women with fistulae needing surgical treatment. Precise figures are not known, but in Northern Nigeria, for instance, several hospitals each have hundreds of fistula patients awaiting admission. Furthermore, it is common experience that as soon as a hospital develops a reputation for repairing fistulae, large numbers of long standing cases appear. These sufferers, who had previously thought their incontinence to be incurable, travel great distances for relief.

7.2 The need for special fistula units

The reason for the accumulation of known cases is that their successful treatment requires adequate hospital facilities, including sufficient nurses and suitable equipment and, above all, appropriate surgical expertise. In overcrowded hospitals hard-pressed by emergency work, fistula patients inevitably have a low priority.

In Ethiopia and Sudan, therefore, special fistula units have been created in Addis Ababa and Khartoum, an example which the meeting felt strongly should be followed elsewhere.

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[3] Op.cit. WHO Geneva FHE/86.4

8. RESOURCES FOR A FISTULA SERVICE

The aim should be to clear the backlog within five years.

8.1 Creation of fistula centres

A fistula centre should be created in each area where there is a large number of patients awaiting treatment. These centres should be attached to major regional hospitals or teaching hospitals to utilize existing facilities such as pathology, X-ray and physiotherapy departments, blood banks and anaesthetic services.

Hostels for fistula patients should be attached to each centre to accommodate patients waiting for admission, those requiring a series of operations and convalescents needing rehabilitation before going home.

Ward accommodation. Provided a hostel is available and the ward has a day-room or verandah for ambulant patients, a 40-bedded ward block should suffice for the treatment of 500 new patients per annum, viz,:

> If three repair operations are performed each day, five days a week for 50 weeks in the year, 750 repair operations could be performed per annum. Five hundred of these would probably be primary operations and 250 second phase operations or repeat procedures. An average hospital stay of 14 days for each operation would require 10,500 bed days (750 x 14). The total bed days per annum being 14,600 (365 x 40), this would allow 4,100 (14,600 - 10,500) bed days for contingencies - a margin of nearly 30 per cent.
>
> From the same calculations, a 30-bedded unit could accommodate 375 new patients per annum, and a 20-bedded unit 250 per annum.

The centre would require its own operating theatre if it is to be used every week day, which can be made available for general surgical emergencies "out of hours".

Theatre equipment and surgical instruments were only briefly discussed at the meeting. They should be selected from the general surgical and gynaecological lists in Annex 2 of "General surgery at the district hospital" [4] augmented by a cystoscope and a small number of special instruments for fistula repair. An adequate stock of catheters, drainage bags and special sutures should be maintained to overcome lapses in supply.

Nursing staff. The key person is the sister in charge of the nursing unit. Before opening a new centre, the person selected may need to attend an existing centre of excellence for training.

Training manuals in gynaecological nursing do not usually include any mention of fistulae. So the standard manuals used in developing countries require augmentation in this respect, perhaps by a leaflet.

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[4] World Health Organization, General surgery at the district hospital, Geneva, 1988

See also:

World Health Organization, Surgery at the district hospital: obstetrics, gynaecology, orthopaedics, and traumatology, Geneva, 1990 (in preparation)

Lawson, J.B. and Stewart, D.B. Obstetrics and gynaecology in the tropics, Edward Arnold, London, 1967

The cadre of nurses in a fistula unit can be very satisfactorily supported by suitably trained ex-patients who are highly motivated if they have themselves suffered from fistulae.

Social work services must be provided for fistula patients. Because their incontinence makes them socially offensive, they require constant moral support and social rehabilitation so that they can return to their communities with their self-esteem restored. Many such patients come from remote rural areas and will need help to cope with the alien environment of the centre by having hospital procedures explained to them.

The social work input can act as a bridge between the patient and the community by involving local volunteers in rehabilitation schemes including occupational therapy.

Patients with obstetric fistulae are nearly always very poor. There is therefore no possibility of paying hospital fees, and financial support will be required to feed patients awaiting admission, whether accommodated in a hostel or not.

8.2 The rôle of the district hospital

Not all fistula patients need to be treated in specialized fistula centres. After appropriate training, district surgeons should be able to handle simple cases in their hospitals. But they should select the complicated cases (massive defects, severe scarring, concurrent recto-vaginal fistulae, previous failed repairs) for referral for more expert treatment.

8.3 Fistula surgeons

The repair of obstetric fistulae requires special techniques which can only be learned with practice. There are expert pelvic surgeons with great experience in fistula work in developing countries, but their numbers are quite insufficient for the expanded services required to deal with the backlog of cases.

A training programme is therefore required to prepare surgeons for fistula work by apprenticeship to experts in this field. To acquire the necessary versatility quickly, the trainees should work in established fistula centres where there are large numbers of cases, learning pre-operative management and planning of surgical treatment, postoperative care and, of course, surgical technique by assisting at operations performed by experts.

Trainees who have already had experience of vaginal surgery should be ready for independent work after about two months attachment to a centre.

The training should preferably be carried out in the trainee's own country, but when necessary a short-term fellowship for training in a centre of excellence in a neighbouring country may be required. Alternatively, a recognized expert may be brought in to run training courses.

9. RECORDS

9.1 The need for accurate case notes

Accurate case notes are always essential for the care of the individual patient. However, in dealing with the fistula problem, retrievable data are also required for epidemiological studies and to monitor the efficacy of treatment. When there is a backlog of cases, progress in reducing this also needs to be assessed from data.

9.2 Standardization of records

In the opinion of the meeting, the data to be collected should be internationally agreed and kept simple, covering not more than 20 variables including the following:

- age, parity and education of patient;
- height and weight;
- cause of fistula (obstructed labour, surgical treatment, other);
- if due to obstructed labour, whether any prenatal care, duration of labour, who assisted at delivery;
- place where the fistula was caused;
- duration of the fistula;
- previous surgical treatment elsewhere;
- concurrent medical conditions;
- date of repair operation(s);
- name of surgeon(s);
- outcome of treatment.

The data on all fistula patients treated in the hospital should be analyzed at regular intervals so that appropriate inferences can be drawn.

10. MOBILIZATION OF RESOURCES TO DEAL WITH THE FISTULA PROBLEM

10.1 Competition for scarce resources

Obstetric fistulae are concentrated in undeveloped regions, where the medical services are also inevitably underdeveloped. Services to deal with the fistula problem therefore have to compete with scarce resources against those required for preventive medicine, primary health care and lifesaving treatment.

Nevertheless, identification of the magnitude of the fistula problem in the areas of high prevalence should lead to a larger allotment of available resources to it by the government health authorities.

10.2 Increasing community awareness

Much can be achieved, and indeed has been achieved, by determined efforts by individuals who know about the problem, not only doctors and nurses but also by concerned members of the public. So publicity to inform community leaders about the problem to secure their support should yield dividends.

10.3 The rôle of international agencies

In regions where specialized fistula units are needed but cannot be provided from local resources, support from international development agencies and foundations should be sought.

The World Health Organization should consider the provision of short-term fellowships for surgeons undergoing training (see 8.3 above), and when necessary the recruitment of visiting experts for teaching assignments.

11. RESEARCH

11.1 Epidemiological and operational research

It was agreed by the participants that research is required in the following areas:

1. The development and validation of community-based research methods by which to measure prevalence.

2. Epidemiological research to identify communities with a high prevalence and the characteristics of the women in them at particular risk of sustaining urethral and bladder injuries during labour.

3. Health systems research to identify unmet needs in the health services and show how correcting these reduces the incidence of fistula.

4. Preventive actions such as the use of the partograph, maternity waiting homes and emergency transport systems, should be assessed by means of studies such as those to be initiated in Ethiopia. Here, epidemiological research to provide baseline data is currently being collected. During the intervention stage a health education campaign aimed at community leaders, village elders, husbands and TBAs will be evaluated as will the impact of a recently opened maternity waiting home. A study is also proposed to evaluate the subsequent pregnancy and gynaecological performance following repair of the fistula.

5. Surgical research to compare the results of various methods of treatment should be carried out. The conditions required for a high initial success rate should be identified and there should be a review of failures in corrective surgery in order to eliminate, as far as possible, the need for further operations.

6. The subsequent reproductive performance of treated patients should also be investigated.

7. The social reintegration of fistula patients following successful repair should be examined.

11.2 The prevention of contracted pelvis

A considerable volume of work has been carried out on patterns of skeletal growth in young women before and during pregnancy. What is now needed is an analysis of the application of this basic research in the field. This is relevant to the incidence and prevention of contracted pelvis.

12. RECOMMENDATIONS

It is imperative that the problem of obstetric fistulae be brought to the attention of the world, emphasizing the social factors involved in causes as well as deficiencies in maternity care. The recommendations of the Technical Working Group focus on the three areas of prevention, treatment and research.

12.1 Prenatal care. Extend the provision of maternity care to deprived communities as part of primary health care development, especially prenatal care, to identify women at risk of obstructed labour.

12.2 Transfer. Encourage and facilitate the transfer of women in prolonged labour for institutional delivery by skilled personnel before bladder damage can occur.

12.3 First referral. Strengthen the services provided at Centres of First Referral by improving the obstetric skills and facilities available there and building maternity waiting homes attached to the centres.

12.4 Identification. Identify more exactly the geographic areas where obstetric fistulae are prevalent, and assess the unmet needs for surgical treatment there.

12.5 Mobilization. Mobilize resources required to deal with fistulae in areas of high prevalence, preferably from local sources, but where necessary enlisting the support of international agencies.

12.6 Specialized centres. Create specialized fistula centres where there is an accumulation of cases, the aim being to repair all existing fistulae within five years.

12.7 Training. Train surgeons in appropriate techniques by apprenticeship to experts, either locally or in neighbouring developing countries with the assistance of short-term WHO fellowships.

12.8 Maintenance of records. Encourage the maintenance of adequate records systems including key variables in order to facilitate epidemiological and operational research.

12.9 Standardization. Introduce a standardized record for fistula cases to facilitate epidemiological studies and monitor the efficacy of treatment.

12.10 Operational research. Encourage operational research to evaluate interventions designed to prevent obstructed labour and consequent fistulae.

12.11 Information sharing. Convene meetings under the auspices of WHO to consider country reports on progress in the prevention and management of fistulae from representatives of endemic areas.

ANNEX 1

LIST OF PARTICIPANTS

Dr A.H. Abbo, Senior Consultant Obstetrician/Gynaecologist, Faculty of Medicine, University of Khartoum, P.O.Box 102, Khartoum, Sudan

Professor Shafiq Ahmad, Professor and Head, Post Graduate Medical Institute, Department of Obstetrics and Gynaecology, Lady Reading Hospital, 40 F, Sahibzada Abdulqayum Road, University Town, Peshawar, Pakistan

Professor K.A. Harrison, Department of Obstetrics and Gynaecology, University of Port Harcourt, P.M.B. 5323, Port Harcourt, Nigeria

Dr John Kelly, Consultant Obstetrician/Gynaecologist, The Birmingham Maternity Hospital, Queen Elizabeth Medical Centre, Edgbaston, Birmingham B15 2TG, United Kingdom

Professor John Bateman Lawson, Vice-President and Overseas Officer, Royal College of Obstetricians and Gynaecologists, 27 Sussex Place, Regent's Park, London NW1 4RG, United Kingdom (Chairman)

Dr Margaret Murphy, Calle Alta 2, Gaucin, Malaga, Spain (Rapporteur)

Dr Katherine Nicholson, P.O. Box 3609, Addis Ababa, Ethiopia[5]

Professor Kusum Shah, 7, chemin des Manons, 1218 Grand Saconnex, Geneva

Dr Farhang Tahzib, College of Health Sciences, Usmanu Dan Fodiyo University, P.M.B. 2254, Sokoto, Nigeria

WHO Secretariat
Division of Family Health
Programme of Maternal and Child Health/Family Planning

Dr Mark Belsey, (Chief)

Dr Barbara Kwast

Mrs Erica Royston

Dr Godfrey Walker, (Manager, Safe Motherhood Research programme)

Division of Diagnostic, Therapeutic and Rehabilitative Technology

Dr A. Wasunna, Medical Officer, Clinical Technology

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[5]Invited, but unable to attend

ANNEX 2

SUMMARY OF REPORTS TABLED AT THE MEETING

Abbo, A.H. and Mukhtar, M. New trends in the operative management of urinary fistulae. Sudan Medical Journal 1975: 13(4): 126-132.

An analysis of 70 cases of urinary fistulae treated from April to December 1974 is presented. Thirty of the cases were operated on in Addis Ababa, Ethiopia and 40 in Khartoum Civil Hospital, Sudan. Sixty-two (88%) of the fistulae were caused by prolonged labour, and eight (12%) by hysterectomy. Four of the post-hysterectomy cases were obstetrical in origin because they followed ruptured uteri for which a hysterectomy was carried out.

Eighty-five percent of the women were between ages 12 and 30 and were primiparae. Forty-nine percent of the women had undergone previous unsuccessful attempts at fistula repair. Most patients were extremely poor and malnourished and many were suffering from malaria, dysentery, helminthic diseases and anaemia. Associated conditions included bladder calculus in four cases.

Surgical techniques are described. Of the eight cases with urethro-vaginal fistulae, all were successfully repaired, with complete restoration of function in five cases and partial restoration of function in three cases. Of the 60 cases of vesico-vaginal fistulae, 57 (95%) were successfully repaired, with 83% restoration of continence and seven cases with stress incontinence. In three cases the repair failed.

Ahmad, S. Urinary fistulas in gynaecological practice in North West Frontier Province. Paper presented in Lahore, December 1988. 14. Unpublished.

Urinary fistulae are described as being the outcome of a sequence of events starting with malnutrition and infections in childhood leading to poor pelvic development, followed by very early marriage, and inadequate management of pregnancy. This results in fistula in primiparous women. Multiparous women also suffer from fistula if they are malnourished: rapid childbearing and continuous lactation result in demineralization of the bones and subsequent osteomalacia causing secondary pelvic disproportion. Mis-management of labour including manipulation, unskilled administration of oxytocic drugs and surgical intervention can also cause fistulae. The female literacy rate in Peshawar is below 26% and prenatal care is either not available or not accepted in rural areas.

A retrospective study of 325 women with urinary fistulae treated at the Lady Reading Hospital in Peshawar, Pakistan from 1979-1988 is presented. The average age of patients was 32.2 years, with four women 16 years old and the oldest patient 65 years old. Grand multiparae (over 5 previous births) accounted for 183 (56%) of the cases, and primiparae for 15%. The average height of patients was 147.5cm. There were 18 cases of recto-vaginal fistula, five of bladder calculus and three third degree perineal tears. Surgical repair was successful in 190 (61%) cases. A brief description and discussion of various surgical methods is given.

Harrison, K.A. Obstetric fistulae. Paper prepared for the Technical Working Group. WHO, Geneva, 1989: 38. Unpublished.

A brief historical review indicates that poverty and famine are key underlying factors in the incidence of obstetric fistula which today is estimated conservatively to be around 55 per 100,000 live births in Ethiopia, and more realistically around 80 per 100,000 live births. A description of the epidemiology of obstetric fistula is given, based on the Zaria maternity survey, Nigeria. The risk of acquiring obstetric fistula was highest among the early teenage primigravidae aged 16 and under; young multigravidae and the oldest most parous group constituted the other high risk group. When compared to taller women, short women were more likely to have pelvic contraction, the presence of which exposes them to the risk of cephalo-pelvic disproportion, to an increased risk of Caesarean section and embryotomy delivery, and to an increased risk of acquiring obstetric fistula from neglected obstructed labour. Associated complications were uterine rupture (15%) and postpartum haemorrhage (6%).

Other factors described as contributing to obstetric fistulae are: early marriage and early start to childbearing, lack of access to health facilities and/or lack of desire to use facilities, the traditional practice of gishiri cutting, low socioeconomic status, and lack of education. Protection against malaria and iron and folic acid deficiencies during pregnancy in young women through the administration of malarial chemoprophylaxis and iron and folic acid supplements showed that growth can be promoted and the incidence of obstetric fistulae lowered. Increased hospital deliveries in Zaria from 1972-77 also helped eliminate obstetric fistulae among women from Zaria itself.

The author concludes that measures to increase pelvic size and to prevent prolonged or obstructed labour are the key issues for prevention of VVF. Literacy and mass formal education are vital and must work in conjunction with better provision of appropriate health services.

Kelly, J. Study of vesico-vaginal fistulae in Ethiopia.

Dr Kelly described his investigative work in Ethiopia which comprises two components. The first is an epidemiological study which is examining the records of a 10% sample of the cases of vesico-vaginal fistulae seen at Addis Ababa Hospital between 1983 and 1988, 300 case records in all. From this study it is hoped to obtain information on the geographical distribution of the cases and on the results of treatment. The second component is an intervention study, the form of which has not yet been decided upon in detail, but which will include an educational campaign aimed at community leaders, village elders, husbands and TBAs. It will be based on information gathered not only on patients treated at the Addis Ababa Fistula Hospital but also at the maternity waiting home at Attar.

Lawson, J. Tropical obstetrics and gynaecology. 3. Vesico-vaginal fistula - a tropical disease. Transactions of the Royal Society of Tropical Medicine and Hygiene, 1989: 83: 454-456

The predominantly obstetric origin of vesico-vaginal fistulae in the tropics is contrasted with the mainly surgical aetiology of those in Europe by analysis of 543 cases treated in Nigeria and the United Kingdom. Of 369 obstetric fistulae in Ibadan, 343 (93%) resulted from obstructed labour.

The basic reason for the common occurrence of obstetric fistulae in tropical countries is that cephalo-pelvic disproportion is common in environments unfavourable to childhood and adolescence, where malnutrition and untreated infections stunt the growth of future mothers and result in a high prevalence of contracted pelvis. An additional factor in many cultures is starting childbearing too early, the first pregnancy occurring soon after the menarche before growth of the pelvis is complete. In the absence of any obstetric care, obstructed labour in the multipara usually ends in fatal rupture of the uterus. In the primipara, the fetus dies and the surviving women are left with vesico-vaginal fistulae.

The general management of patients with obstetric fistulae is described, followed by the principles of their surgical treatment and postoperative nursing care. The importance of success at the first attempt at repair is stressed, and the small place for managing failures by urinary diversion is mentioned. It is concluded that obstetric fistulae should be preventable in the tropics, having now been effectively eliminated from industrialized countries.

Murphy, M. Social consequences of vesico-vaginal fistula in Northern Nigeria. Journal of Biosocial Sciences 1981: 13: 139-150.

In order to explore the social situation of women suffering from obstetric fistulae in Zaria, Nigeria, interviews were conducted with four sets of patients: 100 fistula patients attending a gynaecological clinic for the first time between October 1976 and June 1978; 52 long-term patients who had been incontinent for two years or more; 22 cured patients who had subsequent confinements in Zaria hospital; and 45 patients attending the cardiac clinic for postpartum cardiac failure, who provided controls. A second control group was provided from records of 207 patients with postpartum cardiac failure treated between 1969 and 1972. Further information was gathered from informal discussions with 40 patients in a rehabilitation programme.

Results showed that fistula patients were much younger than the controls: 69% of the new patients and over 50% of the long-term patients were aged 19 and under, compared with 13% and 22% in the control groups. However, there was a close similarity in all groups in age at marriage (the vast majority being married by age 15), and age at first birth (over 60% by age 17). Fistula patients came mostly from poor subsistence farming backgrounds, and only 15% of the husbands of new fistula patients and 8% of long-term patients had received any form of modern education, compared with 31% of the control group. Although polygamous marriage is widespread in the area, 66% of fistula patients were the only wife, a factor also indicative of low socioeconomic status.

Seventy-seven percent of the long-term fistula patients had been living apart from their husbands for two years or more, while none of the control group was divorced or living apart. Childlessness was an important factor in marital breakdown. Of all 174 fistula patients, 50 had living children before developing fistula. Of these 50, 14% were divorced as a result of the disorder, compared with 36% of the 124 patients with no living children. Fistula patients enjoyed less support and interest from their husbands than other patient groups and the amount of practical support given by family members diminished with prolongation of the illness. Patients felt they were a social disgrace to the family and expected to be treated as outcasts. They were frequently segregated - not allowed to eat with the family, cook or pray.

Shah, K.P. Enquiry on the epidemiology and surgical repair of obstetric related fistula in South-East Asia. Paper prepared for the Technical Working Group. WHO, Geneva: 1989: 11. Unpublished.

Based on a postal enquiry and a review of published and unpublished material from Bangladesh, India, Nepal, Pakistan, Sri Lanka and Thailand, this report summarizes some overall findings on fistula in this region. The proportion of obstetric fistula varied from 0.5 to 3.7% of the admissions to the gynaecology wards of the hospitals in parts of India and Nepal. In Bangladesh and Pakistan the condition was most common in areas where the obstetric services are poor, whereas in some Indian states and in Bangkok where primary health care services are more organized, no cases of fistula had been seen for a long time. Ninety-six percent of fistulae admitted to the hospitals were obstetric and the remainder were due to gynaecological causes.

From 70% to 100% of the women suffering from fistulae were from the lowest socioeconomic group, with a literacy rate varying from 27% in Dhaka, Bangladesh to near zero in India, Nepal and Pakistan. Half of the women who had obstetric fistulae were below 25 years of age, and the average height of women in reports from Indian centres was 135cm-150cm. Primiparous women accounted for 60-90% of fistulae in Dhaka, Bangladesh, Chandigarh, Hyderabad, Madras and New Delhi, India, and Lahore, Pakistan. In Indore and Madurai, India, and Patan, Nepal and Karachi, Pakistan, primiparous women accounted for from 10-45% of cases. Most women had received no prenatal care, and many travelled very long distances to reach a hospital. Between 62% and 93% of women who developed vesico-vaginal fistula had been abandoned by their husbands, and rendered social rejects.

Trends in some parts of India seem to show that the incidence of fistula as a result of obstructed labour is declining, but that there has been an increase in fistulae caused by surgical trauma. The proportion of fistulae associated with surgery for obstructed labour varied from 28% to 72%, and this is attributed to inexperienced or careless intervention. It is suggested that more emphasis should be put on training on the indications for referral, use of the partograph, raising the level of women's literacy and status in society, and a national policy to promote later marriage and the use of family planning methods.

Tahzib, F. Study of vesico-vaginal fistulae in Northern Nigeria.

Dr Tahzib stated that concern about the problem of vesico-vaginal fistulae is increasing in Northern Nigeria where there are upwards of 2000 women waiting for an operation. To help them an organization known as the VVF Initiative has been established and is seeking practical and financial assistance (The Lancet, June 10, 1989: 1316-1317). A women's group in Kano has raised funds to build and equip a new operating theatre. The problem of vesico-vaginal fistulae can best be solved as part of a general development strategy which would include components for training surgeons and doctors to carry out relatively simple repair operations, training patients with vesico-vaginal fistulae to disseminate health messages in their own communities, and forming a database from records so that areas of high risk can be identified.

ANNEX 3

SELECTED ANNOTATED BIBLIOGRAPHY

Aziz, F.A. Urinary fistulae from obstetrical trauma. Journal of Obstetrics and Gynaecology of the British Commonwealth 1965: 72: 765-768.

An analysis of 100 cases of obstetric fistula treated by the author at the Liaquat Medical College Hospital, Hyderabad, Pakistan, from 1959-1964 is presented. Patients were mostly young - 66% were 24 years and under, 18% between the ages of 15 and 19 - and were mostly primiparae (58%), although 27% were para 5 or more. All women had been in labour for at least 48 hours, with 87% labouring for more than 72 hours. Most of the fistulae were large and were vesico-vaginal (59%), but 32% were urethro-vaginal.

Vaginal repair was carried out successfully in 73 cases. Eighteen (25%) women had to undergo transplantation of the ureter into the colon. Twenty-four women had both vesico-vaginal and recto-vaginal fistulae, all of which were successfully closed. Associated problems included vaginal stenosis, fibrosis and dyspareunia, inflammatory tubo-ovarian mass, Bartholin's cyst and bladder calculus. A description of surgical methods is given.

Bhasker Rao, K. Vesico-vaginal fistula - a study of 269 cases. Journal of Obstetrics and Gynaecology of India 1972: 22(5): 536-541.

A report on 269 cases of vesico-vaginal fistula treated at the Erskine Hospital, Madurai, India, from 1961 to 1970, is presented. The incidence of urinary fistula was 1 in 446 gynaecological admissions, and 262 (97%) of these fistulae were of obstetric origin, mostly due to prolonged, obstructed labour. Nearly 80% were in the age group 15-30 years, and 60% were primiparae. The duration of the fistulae varied from a few weeks to 22 years. Associated lesions included recto-vaginal fistula, torn cervix, bladder calculus and peroneal palsy. Surgical techniques are described. All but two cases were operated via the vaginal route. Out of 269 fistulae, 228 (85%) were closed at the first attempt, and another 23 after two or three attempts, giving an overall success rate of 93%. Stress incontinence was present in 26 (10%) cases and was mostly relieved by physiotherapy.

Following repair, 30 of the fistula patients had a total of 37 pregnancies: 18 were delivered by Caesarean section, 13 had successful vaginal deliveries, four had abortions, and two had craniotomies for obstructed labour again. The author stresses the importance of prenatal care and hospital delivery for such cases.

Chassar Moir, J. The vesico-vaginal fistula. London, Baillière, Tindall & Co., 1967. 196.

Based on an extensive review of the literature, personal experience and research, the author sets out a history of obstetric fistulae and of the surgeons and their approaches since the seventeenth century. An extensive section on the management of urinary fistulae covers diagnosis, methods available for surgical correction, choice of surgical approach and a special section on recto-vaginal fistula, with detailed diagrams and numerous photographs.

Particular emphasis is placed on pre- and postoperative care and the importance of bladder drainage. There is an extensive list of the instruments used for vaginal operations.

Gunaratne, M. and Mati, J.K.G. Acquired fistulae of the female lower genital tract: a comprehensive five year review. Journal of Obstetrics and Gynaecology of Eastern and Central Africa 1982; 1: 11-15.

An examination of 254 cases of fistulae referred to Kenyatta National Hospital, Nairobi, Kenya, during a five-year period (1974-1978), is presented. 93% of the cases were urinary fistulae, and 7% recto-vaginal. Of the urinary fistulae, 207 (88%) were labour related. Nearly 8% of fistulae were associated with carcinoma of the cervix. There was a high prevalence of juxta-cervical fistulae, associated with abdominal delivery and uterine rupture.

The age distribution showed a peak incidence for women aged 20-24 years, with primigravidae accounting for 42%. However 31% were of parity of five or above. The interval between fistula formation and the women seeking treatment varied from three months to 15 years. Approximately half the patients were seen within the first six months of the fistula occurring. The cure rate was analyzed by type of fistula and varied from 58% to 100%. Complications included haemorrhage, bladder calculus, ureteric occlusion and death.

Haile, A. Fistula - a socio-medical problem. Ethiopian Medical Journal 1983; 21(2): 71-78.

An inquiry using clinical records and a questionnaire was made into the condition of 18 obstetric fistula patients who came for treatment at the Gondar Hospital, Ethiopia, between December 1979 and February 1981.

All patients were Amharas, illiterate and poor. All the women were dependent economically on their husbands, and their marriages had been arranged by parents at ages as young as five, with a mean marriage age of 11.5 years. Nine of the women were aged between 15 and 20 years. Only six women had been delivered in hospital or a clinic, and this was only after prolonged obstructed labour. All but one of the deliveries leading to the formation of fistulae had resulted in the baby's death. Only half of the patients had received some advice about pregnancy and birth from traditional birth attendants. The others had had no information. The problem of lack of transport to health services and distances to be travelled is stressed.

Most of the women felt extreme shame at their condition. Two-thirds of them had stopped attending church and other social services, and more than half of them were divorced - ten of them had been abandoned by their husbands when they acquired fistulae. Ten women were too severely incapacitated to carry out their normal duties as housewives. Six were reduced to begging.

Recommendations for preventive measures are given and include the training of traditional birth attendants and midwives, literacy campaigns and health education with a strong bias towards maternal and child health care, and raising by law the minimum age of marriage.

Kelly, J. Vesico-vaginal fistulae. In: eds. Studd, J. Progress in obstetrics and gynaecology. London: Churchill Livingstone, 1983: 324-333.

The aetiology of vesico-vaginal fistula is presented, and treatment, including timing of surgery, pre-operative assessment and diagnosis, surgical techniques and other forms of therapy including social rehabilitation, are described. A summary of 13 series of repairs is given. Cure rate is estimated to be on average 80%, with 10% stress incontinence and 10% failures. In the author's series of 248 cases, 83% were cured and 10% had stress incontinence. The prospects for successful repair are said to decline with each operation. The indications for vaginal delivery after fistula repair are described.

Lawson, J.B. and Stewart, D.B. Obstetrics and gynaecology in the tropics and developing countries. Edward Arnold, London: 1967: 630.

This book is aimed principally at the doctor who wishes to practise better obstetrics and gynaecology within the limited resources which are frequently the rule in developing countries. Although the basic principles found in standard textbooks are universally applicable, many problems which are encountered in the developing world are not examined and the management advocated for conditions which are common in Africa and Asia may be unsuitable or impracticable.

The book contains chapters on prenatal care, nutrition, complications of pregnancy and the puerperium and the organization of maternity units and training of doctors and midwives. In particular, there are sections on the management of obstructed labour and the treatment of injuries of the urinary tract. There is an analysis of the causes and prevention of fistulae, early management, pre- and postoperative treatment and detailed explanation of repair techniques accompanied by a number of illustrations. Methods of treating urinary fistulae include vaginal and abdominal repair. The method of repair will depend on the position of the fistula, the size of the defect, the structures involved and the degree of fixity to the pelvic wall. Diversion of the urinary stream may be necessary where there is total destruction of urethra and bladder neck or where there have been repeated failures to repair fistulae by other means.

An appendix gives a detailed description, with illustrations, of the instruments needed for repair of vaginal fistulae.

Lawson, J.B. and Hudson, C.N. The management of vesico-vaginal and urethral fistulae. In eds. Stanton, S.L. and Tanagho, E.A. Surgery of female incontinence. Springer-Verlag, Berlin Heidelberg New York: 1980: 360.

The causes of lower urinary tract fistulae (obstetric, surgical and pelvic malignancy) are summarized and clinical presentations described. The early management of obstetric slough injuries leading to fistulae is discussed. Emphasis is placed on the importance of continuous catheter drainage combined with antibiotic therapy to limit tissue damage due to infection. Improvement in the patient's general health is crucial in ensuring the success of surgical intervention. In obstetric cases it is thought advisable to wait for a minimum of three months before attempting repair.

Few obstetric fistulae should be regarded as irreparable. However, certain complicating factors, such as vaginal stenosis, concurrent recto-vaginal fistula (common after obstructed labour), local intrinsic bladder pathology (where schistosomiasis is endemic there may be extensive fibrosis in the bladder wall) and repeated attempts at repair, affect the likelihood of successful closure and therefore require special care.

Various techniques for repairing fistulae are described but it is emphasized that the success of any method depends on accurate suturing without tension. Two basic techniques for closing fistulae by the vaginal route are described. Repair by abdominal route is indicated when fistulae are otherwise inaccessible. It is stressed that postoperative nursing care is almost as important as skilled surgery in successful treatment. Continuous bladder drainage is essential and it is crucial to avoid infection.

Results should be evaluated by success at first attempt. In obstetric fistulae in developing countries an experienced operator should be able to achieve 75% success at the first attempt, a further 15% being closed at the second attempt. Where failure has to be admitted urinary diversion may be undertaken.

Tahzib, F. Epidemiological determinants of vesico-vaginal fistulas. British Journal of Obstetrics and Gynaecology 1983: 90: 387-391.

A study of 1443 patients with vesico-vaginal fistulae who were operated on between 1969 and 1980 at the Ahmadu Bello University Hospital in Zaria, Nigeria, is presented. Prolonged, obstructed labour was responsible for 84% of the fistulae, and the traditional gishiri cut for 13%. The gishiri cut is a traditional operation performed throughout Northern Nigeria. It consists of cutting the anterior (and rarely the posterior) aspect of the vagina with a razor blade. It is used to treat a wide variety of conditions including obstructed labour, infertility, dyspareunia, amenorrhoea, goitre, backache, dysuria and a number of other complaints. Vesico-vaginal fistulae, haemorrhage and sepsis may result.

Four hundred and seventy-five women (33%) were aged 16 and under, and 80 (6%) of these were 13 years or under. The vast majority (83%) were under 30. Fifty-two percent of the women were primiparous. Only three of the fistula patients had received some rudimentary conventional education compared with 7% of all the women who gave birth in the area. Of the 1209 women whose fistula was caused by labour, 778 (64%) gave birth at home.

The number of hospital deliveries increased fourfold between 1970 and 1978, and as the reputation of the medical services in Zaria became more widely known the number of patients with vesico-vaginal fistulae treated doubled. But by 1978 the number of such patients coming from Zaria and the immediate environs had decreased to zero. This seemed to indicate that the women from Zaria were more readily using the hospital services, thus avoiding prolonged, obstructed labour. The author proposes that reducing early marriages and eradicating harmful traditional practices are key preventive measures.

Tahzib, F. Vesico-vaginal fistula in Nigerian children. Lancet 1985: December: 1291-1293.

Of 80 cases of vesico-vaginal fistula in children under 13 years of age in Northern Nigeria, 48 (60%) were due to labour, twelve to the traditional practice of gishiri cutting, and 20 to other causes including congenital abnormalities, coitus,

infections, and trauma. Preventive measures proposed include improved socioeconomic status of the community, education, and reevaluation of the rôle of women in society.

Zacharin, R. Obstetric fistula. Vienna: Springer-Verlag, 1988: 286.

This major work on obstetric fistula presents a historical analysis of the problem, with a description of surgeons and their methods since the seventeenth century. One chapter is dedicated to the work of the Hamlins in Ethiopia and their founding of the Second Fistula Hospital in Addis Ababa. Based on an extensive review of the literature on obstetric fistula and his personal experience, the author describes the incidence, aetiology and pathology of the condition. The second part of the book is devoted to the management of urinary fistulae, describing treatment and operative methods in detail, using diagrams and numerous photographs. An extensive bibliography is given.

World Health Organization. General Surgery at the District Hospital, Geneva: 1988: 231.

This book is published for the guidance of doctors providing surgical and anaesthetic services in small district hospitals (hospitals of first referral) that are subject to constraints on personnel, equipment and drugs and where doctors have limited access to specialist services. The advice offered has been deliberately restricted to procedures which may need to be carried out by a young doctor with limited experience in anaesthesia, surgery or obstetrics using the facilities that can reasonably be expected in such hospitals. With the exception of vasectomy, which may be an important part of national family planning programmes, the procedures included are essential for saving life, alleviating pain, preventing the development of serious complications, or stabilizing a patient's condition prior to referral.

After an overview of basic principles, the book describes, with detailed illustrations, surgical procedures for the face and neck, chest, abdomen, gastrointestinal tract and urogenital system. Paediatric surgery is covered in a special section. Essential surgical instruments, equipment and materials for the district hospital are listed in the annexes.

World Health Organization. Surgery at the district hospital: obstetrics, gynaecology, orthopaedics, and traumatology. Geneva: 1990. (in preparation)

Like its aforementioned counterpart, this book offers advice to doctors and other medical practitioners working in district level hospitals with limited facilities. Obstetric techniques described include those needed to deal with normal delivery and premature labour, abortion, haemorrhage, and other complications of childbirth and the puerperium. In each case a description is given of the assessment and investigations required for accurate diagnosis, the equipment needed and the management of the condition. Possible complications of various treatments are also described.

The section on gynaecology describes methods of dilation and curettage, the diagnosis and management of ectopic pregnancy, techniques for female sterilization, the insertion and removal of interuterine devices, and coital and other injuries to the female genital tract.

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