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ISSUES IN CLINICAL MANAGEMENT

Obstetric fistulas: A clinical review

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Abstract

A high proportion of genitourinary fistulas have an obstetric origin. Obstetric fistulas are caused by prolonged obstructed labor coupled with a lack of medical attention. While successful management with prolonged bladder drainage has occasionally been reported, mature fistulas require formal operative repair, and it is crucial that the first repair is done properly. The literature reports 3 approaches to fistula repair: vaginal, abdominal, and combined vaginal and abdominal. Many authors report high success rates for the surgical closure of obstetric fistulas at the time of hospital discharge, without further evaluation of the repair's effect on urinary continence or subsequent quality of life. Data on obstetric fistulas are scarce, and thus many questions regarding fistula management remain unanswered. A standardized terminology and classification, as well as a data reporting system on the surgical management of obstetric fistulas and its outcomes, are critical steps that need to be taken immediately.

1. Introduction

The close embryologic development and anatomic proximity of the urinary and genital organs predispose them to associated injuries during surgical or radiation treatment and during traumatic deliveries. As a result, in women, fistulas may form between the urethra and vagina, the bladder and vagina, even the bladder and uterus, and they may also involve the rectum.

A high proportion of genitourinary fistulas have an obstetric origin. Obstetric fistulas are caused by prolonged obstructed labor coupled with a lack of medical attention. Obstetric fistulas are thus preventable. No reliable data are available on the true incidence of these fistulas worldwide. A high incidence is found in Africa and parts of Asia, but the risk of developing the condition exists wherever there is insufficient or unreliable emergency obstetric care.

Very little has been published on obstetric fistulas and especially on their management. The need for more information on prevention and repair of obstetric fistulas is obvious. The objective of this article is to review the existent clinical and epidemiologic knowledge pertaining to obstetric fistulas, and identify issues that require immediate attention from both clinicians and policy makers.

Two systematic reviews of the literature on obstetric fistulas were carried out. One looked at the clinical aspects associated with obstetric fistulas, including pathophysiology,

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diagnosis, and the various surgical approaches to treatment as well as preoperative and postoperative care. The other looked at the epidemiologic aspects of obstetric fistulas.

Overall, the review identified published studies containing any of the topics above mentioned. In the review of the literature on the epidemiology of the condition, all epidemiologic studies reporting on genitourinary fistulas were identified (the methodology is detailed in the article by Stanton and colleagues published in this *IJGO* supplement), and we retained for discussion in the present article only those meeting the following criteria. First, more than 80% of the cases reported on, needed to be obstetric fistulas. Second, data on the 5 socio-medical factors considered to have a high significance for clinicians needed to be present (i.e., age; parity; duration of labor; place of delivery and/or whether the delivery was attended by skilled or unskilled personnel; and the proportion of cesarean deliveries performed to release obstructed labor). We found only 5 studies that included data on these 5 factors; 7 other studies reported data on 4 of the factors, and an additional 7 reported data on only 3.

2. Pathophysiology

The conditions favoring the development of an obstetric fistula have been discussed by many authors [1–3]. It has been hypothesized that women with fistulas are likely to have experienced labor before reaching full physical maturity because they were very young, suffered from poor nutrition, or had skeletal dysmaturity at the time of their first delivery. In a high proportion of women with obstetric fistulas the bladder neck or vault is involved, and these fistulas are probably due to cephalopelvic disproportion [4]. In areas of the world where female genital mutilation is common, the deliberately narrowed vaginal introitus may also be a cause of labor obstruction. Wherever labor obstruction, lack of transportation, scarcity of health facilities, or socio-cultural traditions impeding access to health care coincide, obstetric fistulas occur.

In most cases, obstetric fistulas result from the pressure exerted by the presenting part of the fetus during a labor that sometimes lasts for several days [2,5–7]. The level at which fetal descent is arrested determines the site of injury in the lower urinary tract. As the pressure reduces blood supply to the soft tissues of the pelvis, extensive vascular injury leads to tissue necrosis, and then to the formation of an often large fistula, with scarring and reduced vascularity in the tissues adjacent to the defect [1].

As a result, most women with obstetric fistulas have injuries involving multiple organ systems. Arrowsmith et al. [1] characterized these injuries as part of a syndrome that they called the *obstetric labor injury complex*, which can involve the urologic, gynecologic, gastrointestinal, neurologic, and musculoskeletal systems. The authors compare obstetric fistulas to field injuries, which often result in large areas of ischemic tissue. For example a damaged urethra represents a technical challenge for surgeons, as only small amounts of viable tissue may be available for the construction of a neourethra [1].

Widespread destruction of the vagina and extensive scarring is associated with an increased risk of operative failure and/or postoperative stress incontinence [1,8]. Cervical injury is often encountered in women with fistulas, and prolonged obstructed labor may result in the complete loss of the cervix. The combination of vaginal scarring, cervical destruction, and, frequently, amenorrhea may lead to secondary infertility.

3. Epidemiology

Many clinic-based studies have examined the roles of age, parity, and labor circumstances in the occurrence of obstetric fistulas, but the lack of standardized methods of data collection, evaluation, and reporting limits their value. For example, a woman's age may be reported for the time of fistula occurrence or for the time of admission for repair; delivery location ignores the fact that the woman may have labored for days at home alone or with an unskilled attendant before she was delivered elsewhere; and self-reported duration of labor relies on the self-assessment of the start of active labor, which may not be precisely known and may differ among women.

If, from the various reports, the age of women with obstetric fistulas ranges from 9 to 65 years, a vast majority of studies report a mean or median age, together with the percentage of patients younger than 16, 18, or 20 years (Table 1). In the 5 studies discussed in the present review—by Hilton and Ward [5], Ibrahim et al. [6], Wall et al. [2], Tahzib [7], and Kelly and Kwast [9]—the reported age was more often the age at the time of fistula repair. The percentage of primiparas with fistulas varied from 31.4% in the study of 2484 cases by Hilton and Ward [5] to 81.0% in the study of 31 cases by Ibrahim et al. [6].

Labor duration ranged from about 2.5 days [2,5] to 4 days [6]. The percentage of women with fistulas who were delivered at home ranged from 16.0% [6] to 64.4% [7]. While Kelly and Kwast [9] found that almost 61.0% of the women in their study were unattended or attended by an unskilled provider during the delivery that caused their fistulas, reports on the presence or absence of a professional during delivery are rare in the literature on obstetric fistulas. Yet, it is during labor that medical attention is most likely to prevent fistula formation. Among the 5 studies selected for this review, the percentage of cesarean deliveries performed to end an obstructed labor that caused a fistula varies from 6.7% of the 1443 women in Tahzib's series [7] to 40.3% of the 932 women in Wall's series [2].

The reported place of delivery and the percentage of women delivered by cesarean section are of significant importance. As noted, the percentage of women with fistulas whose deliveries took place at home, unattended or attended by an unskilled provider, varies greatly between studies but can be more than 60%. The present review found that between 7% and 40% of women seeking fistula repair were delivered by cesarean section, but obviously not in time to avoid the formation of a fistula. A lack of skilled medical personnel, health facilities, roads, and means of transportation delay the provision of appropriate obstetric care. And even when emergency obstetric care is available, financial and social barriers can prevent women from accessing it.

Although obstetric fistulas are commonly seen as complications mainly of the first pregnancies, because physical immaturity is thought to be primarily responsible for obstetric fistula formation, in a large 1996 review of the literature on the epidemiology of obstetric fistulas Arrowsmith et al. [1] mentioned that 11.7% of patients treated at Addis Ababa Fistula Hospital had had 6 or more children. The mean age at fistula formation was 18.9 years (range, 12–50 years) and the mean age at which the women presented for treatment was 24.2 years (range, 12–76 years) [1].