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BREAST RECONSTRUCTION FOLLOWING MASTECTOMY FOR GESTATIONAL GIGANTOMASTIA
ABSTRACT

BACKGROUND: Gestational Gigantomastia (GGM) is a rare complication of pregnancy. Management is usually initiated with bromocriptine; if this is unsuccessful surgery may be required. The surgical management may be by breast reduction or by mastectomy and delayed reconstruction.

CASE: A 24 year old woman (G1P0) presented at 24 weeks gestation with massive hypertrophy of her breasts. A decision to operate was taken by a multidisciplinary team. At 30 weeks gestation bilateral mastectomies were performed removing more than 8 kg per side. Reconstruction was started 10 months after delivery using tissue expanders followed by definitive implants.

CONCLUSION: GGM can be successfully reconstructed; knowledge of the treatment process and expected outcomes can help clinicians inform their patients.
INTRODUCTION

Gestational gigantomastia (GGM) is a rare condition characterized by rapid and disproportionate growth of the breasts during pregnancy. Women with GGM can experience extreme discomfort and morbidity. In some cases, surgical treatment may be necessary.

Due to the rarity of GGM, the majority of reports are limited to a single patient. Most publications have focused on the etiology of GGM, which remains unknown. Little attention has been given to its surgical management and subsequent reconstruction. A case of GGM managed by bilateral mastectomies and delayed reconstruction is presented.

CASE REPORT:

A 24-year-old woman (G1P0) presented at 24 weeks gestation with disproportionate breast enlargement that had developed since the beginning of her pregnancy. Four years previously she had undergone a breast augmentation with prepectoral silicone gel textured implants. The woman reported that her breasts had increased in size after cessation of oral contraceptive use. The family history was negative for breast pathologies.

At 17 weeks gestation, the woman was seen at another hospital, where treatment was initiated with bromocriptine 2.5 mg 9 2 with no effect. At examination, the breasts were extremely distended. The skin was tense but still intact.

At a multidisciplinary team consultation involving plastic surgery, obstetrics, anesthesiology, and neonatology, it was decided to attempt postponement of any surgical intervention until completion of the pregnancy. By 26 weeks and 5 days gestation, the patient’s general condition had deteriorated. She was bedridden and dyspneic with orthostatic hypotension and acral cyanosis during minimal exertion. She reported paresthesias in her hands. The lower poles of the breasts were ulcerated, and the surrounding skin was irritated. Large veins were present under the skin (Figure 1).

Despite the patient’s subjective complaints of dyspnea, her pulmonary function testing was normal. At 30 weeks gestation, it was decided by the multidisciplinary team to proceed with surgical treatment. As preparation for the intervention, oral steroids were administered to promote fetal lung maturation.

During the surgery, the fetal heart rate and uterine contraction were monitored, and a gynecologic team was present. The surgery was performed on both breasts simultaneously by two teams. The nipples were removed as free-nipple grafts, and the breasts were amputated, with the lower incision placed in the inframammary fold. The skin was redraped to obtain the scar in the inframammary fold. The location of the nipples was estimated using landmarks, and they were replaced as composite grafts on a deepithelialized bed. The total resection was 8,920 g on the left and 8,755 g on the right. Pathologic examination of the tissue demonstrated glandular hyperplasia.
During the surgery, fetal bradycardia was observed for 15 min. This corresponded to a decreased maternal blood pressure and was corrected by fluid replacement. During the operation, the patient received 5 units of packed cells and 3 units of fresh frozen plasma.

Postoperatively, early contractions were observed, and treatment was initiated with Atosiban (Tracotile Ferring b.v., Hoofdorp, The Netherlands) for 48 h. Due to anemia, an additional of 2 units of packed cells were transfused before the patient’s discharge 1 week after the surgery. The bromocriptine therapy was continued for the remainder of the pregnancy, which was uneventful and the patient delivered a term healthy female baby (Figure 2).

The first phase of reconstruction was undertaken 10 months after the pregnancy with placement of McGahn style 133 MV 600-ml (Allergan b.v., Eindhoven, The Netherlands) subpectoral tissue expanders. This was complicated by the development of a superficial infection, which was managed with oral antibiotics.

The patient presented 2 months later with a periprosthetic infection of her right breast that required removal of the tissue expander, which had already been expanded to 550 ml. A corrugated silicone drain was left in place. The cultures demonstrated Staphylococcus epidermis.

After 6 months, the left tissue expander was removed. Anatomic textured gel implants (McGahn style 410FX 495g, Allergan b.v.) were placed in a subpectoral...
pocket of both breasts. This was again complicated 5 days later by a wound infection of the right implant, which was salvaged using irrigation of the cavity with jet lavage, a gentamycin sponge left in the periprosthetic space, and prolonged antibiotic therapy. Once again, the culture demonstrated S. epidermis. This was further complicated by an impending exposure of the implant through the lower pole, which was revised by a double-breasted closure.

A revision was performed 6 months later, with removal of surplus fat and skin in the axillas. Again, 1 month later, the patient became pregnant. She had no complications during this pregnancy, and no changes were observed in the reconstructed breasts (Figure 3). The patient delivered a healthy boy.

**DISCUSSION**

As a rare complication of pregnancy, GGM has a reported incidence that varies from 1:28,000 to 1:100,000 pregnancies. It is difficult to ascertain the actual incidence because it is possible that cases are not reported or are considered to be “within the norm.” Although the etiology of GGM remains unknown [1], various theories have been suggested relating to hormonal imbalance, autoimmunity, and association
with malignancy. Although no clear-cut criteria exist, the diagnosis in such cases is straightforward. Blood tests usually are performed in an attempt to elucidate the etiology, although in most cases they do not change the management. The reported patient had a history of breast implants, but that probably did not play a role in the development of the breast hypertrophy.

Patients with GGM will at first consult their general practitioner or obstetrician. It is important that they consult early with other disciplines to determine a treatment plan.

Patients usually are first managed with the use of bromocriptine, a prolactin inhibitor, and supportive measures. In the past, patients often were managed by termination of pregnancy to stop and possibly reverse the breast growth, with surgery performed at a later stage. With the current advances in intra- and perioperative management, surgery may be safely performed during the pregnancy and does not need to be delayed until its completion.

Due to the risk of premature delivery, every possible effort should be made to postpone surgery until the stage in which a viable baby can be delivered. Administration of glucocorticosteroids to promote fetal lung maturation in case of premature delivery is necessary and should be considered [2, 3].

Two main surgical options are available: breast reduction and mastectomy. Breast reduction has the advantage of providing a one-step procedure, but it probably has a higher risk for hemorrhage than a mastectomy because the incisions are made through the hypertrophied and hypervascular tissue. In addition, the result is unpredictable because further shrinkage is to be expected once the pregnancy ends, possibly resulting in an inferior aesthetic result.

Preservation of breastfeeding may be a possible advantage of breast reduction over mastectomy. However, it should not be forgotten that breastfeeding is not always possible after elective breast reduction and thus should probably not be expected in the case of GGM.

Miller and Becker [4] in 1979 were the first to describe a reconstruction for GGM using an implant. Boyce et al. [5] were the first to report the use of tissue expanders followed by exchange to permanent implants.

Colon and Salloum [6] reported on a strategy similar to the one described in this report. They performed a mastectomy during the pregnancy followed by a delayed two stage reconstruction, but they used an inverted T skin excision rather than the semicircular approach presented in this report.

Ben Meir et al. [7] described management via a mastectomy and reconstruction using implants and a free-nipple graft. The mastectomy was performed so that the definitive scar was placed on the meridian of the breast, giving it a suboptimal aesthetic result.

Ohlsen [8] described management with a breast reduction and banking of the nipples followed by a mastectomy and delayed implant reconstructions, the nipples were returned to the breasts in the same procedure. Swelstad et al. [1] reported on a delayed implant reconstruction.
Shoma et al. [9] reported on the use of bilateral latissimus dorsi muscle flaps for immediate reconstruction during pregnancy. These authors did not include postoperative photos. The additional operative time needed for such flap surgery may increase the risk for both maternal and fetal complications, and although not described in the report, the positioning of a pregnant patient may be difficult. There is no shortage of skin, and it is not clear why a flap is needed.

No other reports have described the use of autologous tissue. The use of an acellular dermal matrix, which could be an interesting option for support of a breast implant in such a reconstruction, has not been reported to date, but it may be considered in future cases.

The management of the nipples also presents a challenge. In the case of a breast reduction, they may be transplanted as free-nipple grafts or transposed on a pedicle, although that should be done with caution due to the great length of such a pedicle. If a mastectomy is performed, the nipples may be discarded, with a delayed breast and nipple reconstruction taking place at a later time [6].

Nipples may be “banked” in the groin for further use [4, 8], or they may be replaced on the skin after mastectomy in preparation for a delayed reconstruction. The latter option, described in this report, has the disadvantage of possible malpositioning of the nipple. Recurrence with future pregnancies should be taken into account and favors the management by mastectomy and reconstruction [1, 5, 9, 10].

Due to the rarity of GGM, recommendations concerning its management cannot be evidence based but instead must be based on communications regarding previous cases. The treatment requires a multidisciplinary approach and coordination regarding the decision for surgery and the timing of surgery. Involved disciplines include plastic surgery, obstetrics, anesthesia, and neonatology. Psychological support is important throughout the treatment.

No agreement exists in the literature as to the preferred procedure (breast reduction or mastectomy) or with regard to the timing of surgery (before or after partum). However if surgery is performed during the pregnancy, it should be delayed until the fetus is viable, and steroids should be administered to promote fetal lung maturation in case of premature delivery.

Surgery should be performed, if possible, in parallel on both sides. Monitoring of both the patient and the fetus should be performed. Obstetricians and neonatologists should be ready for an emergency delivery. Significant blood loss should be anticipated, and the use of a cell saver may be considered.

In case of a mastectomy, dissection above and below the breast tissue makes it possible to find an easier plane. The location of the scar should be planned for the inframammary fold, although it is difficult to assess its definitive position.

Consideration should be given to banking the nipples or opting for a nipple reconstruction after breast reconstruction is completed to avoid possible misplacement. The reconstruction should be delayed to permit adequate healing of the skin coverage.
The bad quality of the skin after the mastectomy may lead to an increased risk for complications. An acellular dermal matrix may have a role in supporting the lower pole of a breast implant. An axillary skin surplus may remain, necessitating later revision.

REFERENCES