Traumatic tibia and fibula fracture in a 36 weeks' pregnant patient: a case report.

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Traumatic Tibia and Fibula Fracture in a 36 Weeks' Pregnant Patient: A Case Report

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ABSTRACT

Background: Bone fracture management in third-trimester pregnant patients is rare and poorly discussed in the literature. In the case of fractures that require orthopedic surgery in near-term pregnant women, clinicians should decide between operating before or after the delivery, carefully evaluating the health of the mother and fetus.

Case Report: A pregnant 41-year-old woman at 36 weeks' gestation had a traumatic midshaft displaced tibia and fibula fracture. A multispecialty team approach resulted in nonoperative treatment until delivery. The sudden spontaneous premature rupture of membranes led to a preterm cesarean section. Five days after cesarean section, the patient underwent surgery for open reduction and internal fixation with pins and plates. The patient recovered well and was discharged with her baby.

Conclusion: The clinical and surgical management of bone fractures in pregnant women should be determined by a multispecialty team, and a tailored intervention should be chosen for each patient.

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INTRODUCTION

Fracture of the tibia is the most common long-bone fracture and is generally associated with fibula fracture. Management depends not only on the fracture pattern but also on the patient's systemic condition. Typically, treatment of lower extremity fractures is operative, focused on the tibia fixation, and the associated fibula fracture is managed without fixation. Closed options are reduction and immobilization in a long-leg cast.

Trauma, affecting 7% of all pregnancies, is the leading cause of nonobstetric death in pregnant women, with an overall maternal mortality of 6% to 7%.[1,2] Fetal mortality has been shown to range from 55% to 65% in major trauma cases.[1,3] Trauma affects the obstetric outcome when it is associated with maternal death or direct uterine or placental injury.[4]

We report a case of a pregnant woman in the 36th gestation week who sustained a traumatic tibia and fibula fracture. We found only 1 published case in the literature that describes accelerated tibial fracture union in the third trimester of pregnancy.[5]

CASE REPORT

A 41-year-old woman gravid 2, para 1, at 36 weeks'gestation presented to the emergency department with severe left-sided lower extremity pain and limping. The injury was associated with a low-energy fall. Her obstetric history revealed a previous vaginal delivery at the 40th week of an uneventful gestation. She had no history of any medical disorder. She was a nonsmoker and did not drink alcohol during pregnancy. Her present pregnancy had been uneventful. The patient underwent all routine laboratory and ultrasound tests, and the fetus had developed normally.

She was initially evaluated by an emergency room orthopedist, followed by consultation with an obstetrician. Apart from generalized pain and limitation of motion in the patient's lower left extremity, the general physical examination was unremarkable. There was no evidence of compartment syndrome or neurovascular deficit. The skin was intact. Plain radiography showed a displaced midshaft fracture of the left tibia and fibula

Figure. Initial radiograph showing the patient's midshaft displaced tibia and fibula fracture.

(Figure). Abdominal ultrasound revealed no pathological findings. Fetal cardiotocography showed beat-to-beat heart rate variation with normal fetal heart rate.

Because of the nature of the injury and the gestational age, nonoperative treatment until after the baby was delivered was considered the best option, with a low risk of causing the patient residual pain, long-term disability, and obstetric complications. After consulting with an orthopedist and an obstetrician, the patient decided to undergo conservative management until elective cesarean section at term. Cesarean section was chosen to avoid the labor stress in a patient with an immobilized fractured limb. After application of a below-knee cast, the patient was transferred to the obstetrics/gynecology department for continued antepartum care. Because the patient was not permitted to bear weight on the fractured leg, her risk of developing deep vein thrombosis (DVT) was increased. Therefore, she was administered 4,000 UI of subcutaneous enoxaparin every 12 hours for thromboprophylaxis.

Two days later, while the patient was lying in bed, she had a spontaneous premature rupture of membranes, leading to a cesarean section before the elective period initially planned. The infant's birth weight was 2940 g, and Apgar scores were 9 and 9 at 1 and 5 minutes, respectively. The umbilical arterial pH was 7.28 and the venous pH was 7.30.

Lower limb color Doppler examination performed 2 days after the cesarean section showed no abnormalities. Five days after the cesarean section, the patient underwent surgery for open reduction and internal fixation with pins and plates and had an uneventful recovery. The patient continued subcutaneous heparin for DVT prophylaxis and tolerated postoperative rehabilitation without difficulty.

Another lower limb color Doppler examination performed 9 days after cesarean section showed no abnormalities. After 15 days without weight-bearing activity, a 30-day period of total left leg unload using antebrachial crutches was prescribed. DVT prophylaxis was continued until the patient was able to ambulate on her own.

DISCUSSION

Trauma is the main cause of nonobstetric death in the gravid mother in the United States.[2] With trauma, fetal mortality can rise to 65% as the result of placental abruption, direct fetal injury, and other causes.[3] Because relatively minor injuries may be life threatening for both mother and fetus, it is important to assess the need for intensive medical care. If the injury is completely away from the pregnant uterus, the prognosis for the pregnancy is good.

Primary care varies little in pregnancy compared with the nonpregnant patient. The priority goes to the mother. Once maternal assessment has been done and care is set, noninvasive diagnostics, such as abdominal ultrasonography and cardiotocographic monitoring, should be used as soon as possible.

In reviewing English language publications in MEDLINE and Embase, we found only a few reports of limb fracture during pregnancy[6,7] and only 1 known case of tibia fracture.[5]

We believe there are 2 main issues concerning the management of fractures in pregnancy. The first is whether to treat the pregnant patient conservatively or surgically. Tibia and fibula fractures are usually treated with tibia fixation, while the associated fibula fracture is managed without fixation. Very little is known about the risks and complications of surgery and anesthesia for fractures treated in pregnant women. No currently used anesthetics are known to be teratogenic but when possible, regional technique is preferred.[8] Our patient had no indications for immediate surgery of the fractured limb and no sign of DVT. Therefore we preferred the conservative approach with immobilization of the leg in a below-knee cast. We were concerned about her increased risk of developing DVT as a result of prolonged immobilization, so the patient was started on subcutaneous heparin for DVT prophylaxis. We have found

no case reports in the literature describing DVT in pregnant women with isolated lower-limb fractures.

The second issue to consider when managing a fracture in pregnancy is the role and timing of a cesarean section. The approach should be multidisciplinary involving a gynecologist, an orthopedist, and a neonatologist. A cesarean section may be indicated depending on gestational age. Because our patient did not have monitoring or ultrasound abnormalities, we planned an elective cesarean section at 38 weeks. The literature has some reports of preterm cesarean delivery performed prior to orthopedic surgery.[9,10] In those cases, the patients had femoral or hip fractures. We did not find any case reports of preterm cesarean sections for tibia fracture. Ahmad et al reported a case of accelerated tibia fracture union in the third trimester of pregnancy.[5] The authors delayed operative treatment to the postpartum period. The pregnancy proceeded quietly with no complications. Fracture union occurred spontaneously and did not need surgery.

CONCLUSION

Our case of traumatic midshaft displaced tibia and fibula fracture at the 36th week of pregnancy suggests that these injuries can be managed successfully in properly selected patients with an initial nonoperative intervention followed by open surgery postpartum. The efficacy and safety of this approach have yet to be determined, and further clinical research is needed.

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