

## Aortic dissection during delivery by cesarean section

*Dissection aortique lors de la délivrance par césarienne*

Baya AZIZA, Samiha CHERIF, Bouzid ABDELMALEK

Service de chirurgie cardio-vasculaire, EHS Djeghri Mokhtar, Constantine, Algérie

Correspondance à :  
Aziza BAYA  
[baziza73@gmail.com](mailto:baziza73@gmail.com)

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**RÉSUMÉ**

La dissection aortique est rare chez les jeunes femmes, mais lorsqu'elle survient, elle est fréquemment associée à la grossesse et particulièrement à l'hypertension gravidique. Nous rapportons le cas d'une femme âgée de 37 ans présentant une hypertension gravidique qui, pendant l'accouchement par césarienne, s'est plainte d'une douleur thoracique aiguë. Un angio-scanner a été réalisé, objectivant une dissection aortique. Elle a été opérée en urgence avec succès au troisième jour après l'accouchement. Notre but est de mettre en évidence la nécessité de suspecter le diagnostic de la dissection aortique chez une patiente avec une HTA gravidique, qui se plaint de douleur thoracique aiguë.

**Mots-clés :** Grossesse, douleur, accouchement, hypertension, dissection aortique aiguë

**ABSTRACT**

Aortic dissection is unusual in young women, but when it occurs it is frequently associated with pregnancy and more importantly with pregnancy hypertension. A 37 old women with gestational hypertension was presented with chest pain during delivery by cesarean section and chest computed tomography scan was done and showed an aortic dissection; she was operated in emergency with successful outcome after delivery. Our aim is to put the point on the need to suspect the diagnosis of aortic dissection in a patient with preeclampsia and who complains of acute chest pain.

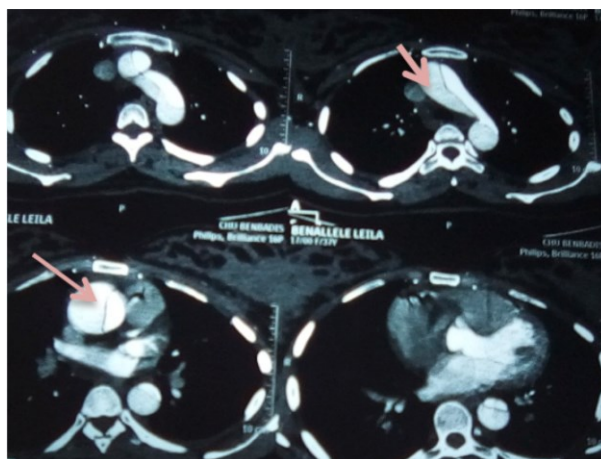
**Keywords:** Pregnancy, pain, delivery, Hypertension, acute aorta dissection.

**Introduction**

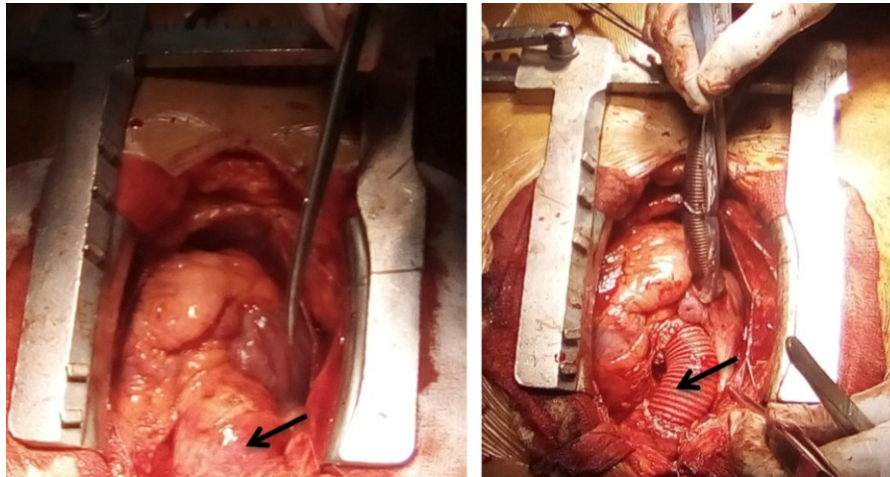
Acute aortic dissection can occur with the connective tissue disorders and high blood pressure disorders during pregnancy, including preeclampsia, coarctation of aorta, and Marfan's syndrome (1). In women aged less than 40 years, 50 % of all aortic dissections are associated with pregnancy (2). Systemic hypertension is the main risk factor and it has been reported in the literature review that deaths occurred by the rupturing of aortic dissection after a cesarean section in the patients who were with gestation's hypertension. The main treatment of type I of De Bakey aortic dissection is surgical, but medical management of the hypertension must be undertaken. We report a case of aortic dissection, which occurred during delivery by cesarean section in a woman with a gestational hypertension.

**Case report**

A 38-year-old primigravid woman who have had presented with pregnancy hypertension, and during the delivery by cesarean section she had a severe chest pain just at the time of delivery. An echocardiogram suggested severe aortic regurgitation and an ascending aortic dissection. CT angiography was performed and showed an aortic dissection type I of De Bakey (Figure 1). The patient was referred to our institution at the third day after cesarean section. Soon afterward she entered the hospital in the emergency room, under general anesthesia and assisted ventilation and endotracheal intubation. After control of the femoral artery, a median sternotomy was performed. The ascending aorta was echymotic but not very enlarged, measuring 45 mm of diameter. The patient was placed on atriopulmonary bypass, the aorta was cross-clamped just proximal to the innominate artery and opened transversely.



**Figure 1.** A transverse view of computed tomographic angiography of the thorax showing a dissection of the descending and ascending thoracic aorta (arrows)



**Figure 2.** Left: Peroperative view of the aortic dissection (Arrow). Wright: Replacement of the ascending aorta with Dacron graft (Arrow).

The dissection extended proximally to the sino-tubular junction with presence of a unique intimal tear above the coronary sinus and distally into the aortic arch. The 3 aortic cusps had prolapsed toward the left ventricle because of detachment at 2 of the 3 commissures. The ascending aorta was replaced with a 26 mm Dacron graft (Figure 2) and aortic root reconstruction by reattachment of the two cylinders. The proximal end of the aortic replacement was placed at the sinotubular junction with conservation of the aortic sinus and valve and resuspension of the sinotubular junction. After repair, postoperative echocardiography showed no aortic insufficiency. Cardiopulmonary bypass was discontinued uneventfully. The early postoperative course was unremarkable except for marked systemic hypertension, which was controlled by Loxen and Bisoprolol and methyldopa. The patient was discharged at day 7.

## Discussion

Acute aortic dissection in pregnancy is very rare and its management is complex. In women aged less than 40 years, 50% of all aortic dissections are associated with pregnancy. Particularly, it has been stated that 50% of aortic dissections occurring in women of ages below 40 years are related to the pregnancy. Hypertension and Marfan's syndrome are the most commonly occurring risk factors in cases of aortic dissection during pregnancy.

Aortic dissection in pregnancy can occur in all stages of pregnancy, but it has been reported that the aortic dissection mostly occurred in the third trimester (51%) and in the postpartum period (20%), compared to the first trimester (6%) and the second trimester (10%) (2). Our case occurred just during delivery by a cesarean section.

This case highlights some important learning points: a time of a clinical presentation suggestive of aortic dissection, which is the moment of delivery during cesarean section. This may have been the result of a decrease in the effect of spinal anesthesia, and the result of surgery of the acute aortic dissection with a high hemorrhage risk in the first days after delivery. The possibility of aortic dissection should be considered in all pregnancy or postpartum women who complain of chest pain, especially, in women with risk factors like hypertension or Marfan's syndrome. Immediate management of aortic dissection includes stabilizing the patient with attention to blood pressure reduction. Beta Blockers are the first drugs of choice because of their mechanism of lowering the rate of rise of ventricular force and stress on the aorta. Intravenous agents are chosen for rapid onset. The computed tomographic angiography, transesophageal echocardiography, and magnetic resonance imaging have been shown to be both more accurate and less invasive for the diagnosis of aortic dissection. In our case, there are no problems from the injection of contrast agents and radiation into the fetus because the disease occurred after delivery.

Concerning management of acute surgery, it depends of the classification for aortic dissection, which is based on anatomic involvement of the aortic dissection. In the De Bakey classification and Stanford classification, type II-A dissections originate in the ascending aorta and extend to at least the aortic arch require emergency surgical repair, whereas medical therapy is usually the initial strategy for acute type III-B dissections.

Treatments for aortic dissection in pregnancy are determined depending on the type of dissection, occurrence stage (in pregnancy, at delivery, or after delivery). For the anatomical classification of aortic dissection in pregnancy, the case of dissection involving the ascending aorta is 89%, De Bakey type I is 70%, and De Bakey type II is 19%. De Bakey type III is reported as 11% (2).

The main problem in our case is dealing with the use of anticoagulants during surgery; and if anticoagulants are used right after delivery, a risk of uterine hemorrhage should be considered. In our patient, we have not had this problem. But in our case there is not a problem of the time of surgery. More authors reported a results of a surgery of the aortic dissection after delivery as Pumphyrey (3) who performed surgery for the aortic dissection 48 hours after a cesarean section on the patient of 37 weeks gestation with De Bakey type II and Snir et al (4) who reported that surgery for aortic dissection was performed immediately after the cesarean section. In addition, Zeebregts et al (5) presented therapeutic guidelines based on types of aortic dissection as per Stanford classification.

Prognostic factors for aortic dissection in pregnancy are not well known, but risk of death is the greatest within the initial 2 weeks from the occurrence of aortic dissection. Huang (6) and others reported two cases of aortic dissection in association with preeclampsia. First case occurred during the postpartum period, and the second case occurred during the third trimester. However, both patients died due to delayed diagnosis, despite of treatment.

The case we are reporting is different in some points: it is the first case of aortic dissection in a woman who had preeclampsia and in whom the aortic dissection occurred during delivery by an acute and severe chest pain. There is no hemorrhage after surgery, we have a successful outcome after surgery and the patient was discharged at day 7 after surgery.

## Conclusion

Aortic dissection during pregnancy is very rare ; this report is a reminder to anesthetists, surgeons and obstetricians who, although rare, should think of acute aortic dissection during pregnancy and during delivery, especially in patients with gestation hypertension and the diagnosis should not be delayed in order to improve prognosis. Also, we must insist that in the presence of cardiovascular risk factors and from the outset of pregnancy, conventional measurement of blood pressure alone is not a sufficient marker; diagnostic imaging is often essential.

**Déclaration d'intérêts** : les auteurs ne déclarent aucun conflit d'intérêt en rapport avec cet article.

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