Laparoscopic adrenalectomy for pheochromocytoma in pregnancy

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Case report

A 28-year-old woman was diagnosed with right adrenal pheochromocytoma on the basis of episodes of nausea, bloating and headaches, and elevated 24-hour urine metanephrines, normetanephrines and epinephrine. Imaging studies included ultrasonography, computed tomography and a metaiodobenzylguanidine (MIBG) scan. Serum calcium, calcitonin, renin and aldosterone levels were normal, as were the results of a low-dose dexamethasone test and a thyroid-stimulating hormone test. Genetic testing for multiple endocrine neoplasia, type 2 and von Hippel–Lindau disease was negative. Two weeks after the diagnosis, the patient discovered that she was pregnant. She was subsequently taken off prazosin and referred to both an obstetrician who specialized in high-risk pregnancy and a laparoscopic surgeon. The patient underwent an uncomplicated laparoscopic right adrenalectomy at 16 weeks' gestation. This led to resolution of symptoms and biochemical abnormalities and delivery of a healthy son at term. Pathological analysis confirmed the diagnosis of pheochromocytoma with minimal cytological pleomorphism and no extension outside the adrenal gland; these findings are consistent with the presence of a benign lesion.

Discussion

Pheochromocytoma associated with pregnancy is so rare that the incidence is difficult to estimate. One series reported an incidence of 0.007% in a 22-year review of 30 246 pregnancies.[1] There are fewer than 250 cases reported in the literature.[1] Because of relatively high fetal and maternal mortality, the resection of the tumour following medical stabilization is the preferred treatment. Timing of surgery, however, is controversial. If the diagnosis is made in the third trimester, medical treatment is preferred, followed by resection at the time of cesarean section or shortly after vaginal delivery. If the diagnosis is made in the first and second trimester, the consensus is to remove the tumour as soon as hypertension is controlled medically to remove the potential source of hypertensive insult to the mother and the fetus. The second trimester is the optimal time for surgical intervention because the risk of spontaneous abortion is minimal.[1] If there is a legitimate concern that the lesion is malignant, resection should be undertaken as soon as possible.

Since the advent of laparoscopic adrenalectomy in 1992, there have been 3 reported cases of laparoscopic adrenalectomy for pheochromocytoma in pregnancy performed with good results.[2–4] These cases resulted in resolution of pheochromocytoma clinically and biochemically, as well as safe outcomes of pregnancy. Summaries of the previous cases and of this case are outlined in Table 1.

The evidence concerning safety of laparoscopic surgery during pregnancy is based on studies of a small number of patients. In a literature review by Holthausen and colleagues of 112 laparoscopic operations performed during pregnancy between 1987 and 1997, the outcome for both the fetus and the mother were good in general.[5] Only 1 series of 7 patients reported 4 cases of fetal mortality. The concern with laparoscopic surgery during pregnancy relates to CO_2 pneumoperitoneum, which may result in fatal acidosis and subsequent fetal hemodynamic abnormalities and impaired placental gas exchange. The long-term effects of prolonged fetal acidosis during laparoscopic surgery have yet to be elucidated. In a series of 11 laparoscopic cases with a follow-up of 1–8 years, no deleterious effects to the mother or the children were observed. This case contributes to the evidence, although anecdotal, that laparoscopic adrenalectomy for pheochromocytoma in pregnancy is safe for selected patients.

Competing interests: None declared.

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Table 1

A comparison of case reports of laparoscopic adrenalectomy for pheochromocytoma in pregnancy

Characteristic	Case report			
	Current case	Demeure et al[2]	Martinez Brocca et al[3]	Pace et al[4]
Patient				
Age, yr	28	24	34	24
Pregnancy status	1st	1st	Not stated	1st
Time of diagnosis	1st trimester	1st trimester	1st trimester	1st trimester
Preoperative care				
Alpha-adrenergic blockade	Yes*	Yes	Yes	Yes
Tumour				
Side	Right	Right	Right	Left
Size, cm	2.2	3.2	2	6
Operation				
Gestational age, wk	16	18	20	13
Position	Lateral	Lateral	Lateral	Lateral
Approach	Transabdominal	Transabdominal	Transabdominal	Transabdominal
Operative time, min	108	240	165	140
Complications	None	None	None	None
Postoperative care				
Complications	None	None	None	None
Length of stay, d	2	4	Not available	3
Follow-up				
Normalization of BP	Yes	Yes	Yes	Yes
Biochemical normalization	Yes	Yes	Yes	Yes
Delivery	Term	Term	Term	Term
Health of infant	Healthy	Healthy	Healthy	Healthy

BP = blood pressure.
*Temporary, until pregnant state confirmed.

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