

# Preoperative value of CT angiography in the laparoscopic removal of rudimentary uterine horn

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**Abstract** Computed tomography (CT) angiography, a minimally invasive technique for vascular imaging, has been shown to be an excellent tool for imaging the pelvic arteries and their branches. This report describes the accuracy of CT angiography in the preoperative evaluation of the blood supply for laparoscopic dissection of rudimentary horn. The rudimentary horn was successfully removed laparoscopically with minimal blood loss.

**Keywords** CT angiography · Laparoscopic surgery · Non-communicating uterine horn · Unicornuate uteri

## Introduction

Women who have a non-communicating uterine horn may present after menarche with progressive abdominal pain caused by hematometra, hematosalpinx, and endometriosis. However, many women remain asymptomatic. Pregnancy in a rudimentary uterine horn is associated with acute uterine rupture. The key to successful management is early detection and surgical removal before pregnancy [1]. Computed tomography (CT) angiography, a minimally invasive technique for vascular imaging, has been shown to be an excellent tool for imaging the pelvic arteries and their branches [2, 3]. This report describes the accuracy of

CT angiography in the preoperative evaluation of the blood supply for laparoscopic dissection of rudimentary horn.

## Case report

A 12-year-old girl was admitted to the hospital with severe dysmenorrhea that was particularly localized in the left lower abdomen. Menarche was at 11 years of age, and her menstrual cycle consisted of 5 days of light bleeding every 5–6 weeks. An ultrasound scan suggested a bicornuate uterus with a normal right horn and a slightly enlarged left horn. The patient underwent simultaneous magnetic resonance (MR) imaging and CT scanning, both of which confirmed the uterine anomaly and also screened for associated urinary tract anomalies. The MR images revealed two separate normal-sized uterine horns (Fig. 1a) and a normal vagina. A single cervix was seen to communicate with the right horn. The CT images revealed a left renal agenesis, and a pelvic CT angiography (Fig. 1b,c) indicated that both the right and left uterine arteries supplied the right horn, suggesting a rudimentary left horn. On the basis of these findings, we decided to perform an operative laparoscopy to remove the rudimentary horn.

Initial inspection revealed normal tubes and ovaries bilaterally and a uterus with two completely separate uterine horns. The left rudimentary horn was attached to the right horn by a band of tissue. This band of tissue was coagulated by means of bipolar cautery and transected, thereby facilitating the separation of the rudimentary horn and confirming the absence of the uterine artery after dissection of a bladder flaps. The round ligament, utero-ovarian ligament and mesosalpinx were then cauterized and cut with minimal blood loss. The endometrium was excised

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**Fig. 1** A case of a right non-communicating rudimentary uterine horn. **a** Axial plane of magnetic resonance (MR) imaging. Two separate uterine horns clearly visible. **b,c** Frontal view of pelvic computed

tomography (CT) angiography shows two separate uterine horns, and right (**b**, *arrow*) and left (**c**, *arrow*) uterine arteries, both of which supply the right horn

from the remaining myometrial flaps of the right horn. These flaps were closed over the intact midline septum, which was fibrous in appearance. Histology was consistent with a non-communicating rudimentary horn.

## Discussion

Approximately 90% of these unicornuate uteri with a rudimentary horn are non-communicating, but fine anatomical variations may be encountered, particularly in the attachment of the rudimentary horn to the unicornuate uterus [1, 4]. The unicornuate uterus with a rudimentary horn can be either fixed or separated. Assessment of whether the horn is separated or non-separated can provide important clues as to the likely site of the uterine artery. Rudimentary horns of the separate type, in particular without a blood supply through the uterine artery, as experienced in our case, have been successfully removed laparoscopically [5]. For non-separated horns, bleeding and

compromise of the wall thickness of unicornuate uterus can occur, and extirpation may best be done by laparotomy. The CT angiographic technique should be brought to the attention of laparoscopic surgeons and may be used in some cases to improve laparoscopic management of Mullerian anomalies.

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