

# RISK FACTORS TO PREOPERATIVELY IDENTIFY LOSS OF RENAL FUNCTION IN DEEP INFILTRATING ENDOMETRIOSIS PATIENTS DUE TO URETERAL STENOSIS

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**Objective:** To describe clinical and radiologic characteristics of deep endometriosis (DE) patients diagnosed with a functional irreversible kidney loss and to evaluate risk factors for developing renal loss function.

**Patients and Methods:** We conducted a retrospective cohort study including 463 patients who underwent laparoscopic DE surgery due to painful symptoms and/or infertility and/or bowel or ureteral stenosis. We selected all patients who had undergone surgery for DE in our tertiary university teaching hospital between January 2014 and February 2020. All patients had histological confirmation of DE. We evaluated two groups of patients according to preserved or damaged renal function. Loss of renal function was defined as relative renal function <30%. An analysis of epidemiologic, clinical and ultrasound characteristics and surgical treatment was performed.

**Results:** A total of 463 DIE patients were identified to be included in the study. Eight patients did not give informed consent and nineteen patients did not have accurate information in the clinical records and were excluded. Finally, 436 DE patients were analyzed. Two groups of patients were evaluated: patients presenting loss of renal function due to endometriosis confirmed by renogram (Renal Loss Group; n=15) and patients with preserved normal renal function (Non-Renal Loss Group; n=421). All patients in the Renal Loss Group (**Table 1**) had been diagnosed or suspected of renal function loss prior to surgery and most had been referred to our tertiary hospital with the diagnosis of loss of renal function or a high suspicion of this complication. There were no differences among both groups in relation to the mean age, body mass index, rate of previous surgery (either related or non-related to endometriosis), rate of previous hormone treatment, and rate of different pain symptoms. Comparison of clinical data showed that the Renal Loss Group had a higher infertility rate and a higher proportion of asymptomatic patients.

The following ultrasound findings showed statistically significant differences between both groups: mean endometrioma diameter, the presence of intestinal DE and negative sliding sign. As expected, the cumulative DE diameter was greater in the Renal Loss Group compared with the Non-Renal Loss Group suggesting that the greater the DE burden the greater the probability of loss of renal function. Among the 101 diagnosed ureteral DE, 74 were suspected by imaging technique before surgery. However, 27 cases of ureteral DIE were diagnosed intraoperatively. The other ultrasound findings were confirmed during the surgical laparoscopic procedure. No recurrences of ureteral endometriosis were reported during a minimum follow-up of 18 months. In multivariate analysis, infertility, being asymptomatic, presence of intestinal DE, presence of uterosacral ligament DE, negative sliding signs and cumulative DE diameter remained significantly associated with irreversible loss of renal function (**Table 2**).

**Table 1**

Case	Age	BMI	Infertility	Asymptomatic	Intestinal DIE	Uterosacral ligament DIE	Negative sliding sign	Total DIE lesions (mm)
1	41	19.81	YES	YES	YES	YES	YES	20
2	42	23.01	NO	YES	YES	YES	YES	42
3	28	22.50	YES	NO	YES	NO	NO	55
4	33	32.27	NO	NO	YES	YES	YES	70
5	34	20.82	NO	NO	YES	NO	YES	38
6	35	21.50	YES	NO	YES	YES	YES	99
7	24	22.67	YES	NO	YES	YES	NO	44
8	38	21.98	YES	YES	NO	YES	YES	21
9	21	22.89	YES	NO	NO	YES	YES	53
10	35	19.53	YES	YES	NO	YES	NO	25
11	25	18.82	YES	NO	NO	YES	YES	92
12	32	24.01	YES	NO	NO	YES	YES	5
13	37	17.93	YES	NO	NO	YES	YES	12
14	32	23.80	YES	NO	NO	YES	NO	57
15	35	27.60	YES	NO	YES	YES	NO	20

**Table 2**

Variable	Adjusted Odds Ratio	Lower 95% CI	Upper 95% CI
Infertility	3.46078	0.7396351	16.19312
Asymptomatic patients	11.17895	1.447529	86.33253
Intestinal DIE	1.449349	0.2555659	8.219462
Uterosacral ligament DIE	0.8530137	0.1295943	5.614694
Negative sliding sign	3.496012	0.7479286	16.34126
Cumulative DIE diameter	1.028336	1.000987	1.056433

**Conclusion:** Our study identified clinical and radiological variables that increased the risk of loss of renal function due to DE ureteral stenosis. Therefore, among these patients, severe urinary tract obstruction should be specifically ruled out with radiological urinary tract tests. Further studies are needed to confirm our results to avoid this rare, albeit severe, DE complication.