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## Author Reply to the Editorial Comment #16-02517

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### Keywords

UPJ obstruction; renal scans; pyeloplasty; radiology; renogram; pyeloplasty

### Main Text

Patients with suspected ureteropelvic junction obstruction (UPJO) and equivocal <sup>99m</sup>Tc-mercaptoacetyltriglycine (MAG3) diuretic renographic study constitute a diagnostic challenge. The tracer uptake and excretion curve during a nuclear renal scan are functions of complex interactions between renal function, collecting system volume, and outflow obstruction. This creates challenges in translating curve morphology into an easily reported yes or no answer concerning the presence or absence of obstruction. We defined a new measurement, P<sub>40</sub>, which is the percent of maximal tracer eliminated at 40 minutes, during MAG3 diuretic renography.<sup>1</sup> P<sub>40</sub> has increased sensitivity (73%) as compared to traditional T<sub>1/2</sub> interpretation of the MAG3 renal scan (49%). Moreover, P<sub>40</sub> is simple to calculate from standard renography curves and requires no protocol alterations or additional expense. Treatment goals for UPJO include symptom reduction (eg, pain) and reduction in infectious risk, as well as preservation of renal function. In this study of symptomatic patients rendered asymptomatic by surgery, postoperative P<sub>40</sub> improved more consistently than T<sub>1/2</sub>, suggesting that P<sub>40</sub> may be a more valuable surrogate marker for clinically significant obstruction.

As Meyer and Gorin correctly stress,<sup>2</sup> we cannot determine what would have happened to kidney function for the symptomatic patients in this study had they not undergone surgical intervention. In general, whether pyeloplasty prevents long-term function deterioration for patients with suspected UPJO and equivocal evidence for obstruction on renal scan remains

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unknown. A recent cohort study by Ozayar and colleagues demonstrated that 96% of patients (n = 23 of 24) with equivocal UPJO had complete symptom resolution after minimally invasive pyeloplasty.<sup>3</sup> Future work defining long-term renal function in patients with equivocal UPJO is certainly needed. It is clear from our data and the work by Ozayar et al that patients with symptomatic UPJO and equivocal MAG3 renography benefit from surgical intervention with respect to symptom reduction. The association between P<sub>40</sub> and long-term renal functional preservation, though, deserves further study. We anticipate that P<sub>40</sub>, a simple measurement dependent on urine flow dynamics, may be useful in identifying those patients who would benefit most from pyeloplasty.

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