

TITLE: DIFFICULT LARYNGOSCOPY IN DIABETES MELLITUS  
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Introduction

A retrospective search was conducted to determine the incidence, associated features and possible etiology of difficult laryngoscopy in patients with diabetes mellitus undergoing pancreas and kidney transplantation.

Methods

Medical records of all pancreas recipients since the program began in 1982, and of all renal recipients during 1986 were reviewed. Consent to participate in chart review was obtained in compliance with institutional Human Subjects Committee regulations. Laryngoscopy was judged difficult when direct observation of the vocal cords was impossible, and easy when all landmarks for tracheal intubation were identified on initial inspection. Data were classified for sex, and in renal recipients for the presence or absence of diabetes, and for cadaver or living donor. Pancreas recipients were categorized for isolated or combined renal-pancreas transplant. Continuous variables of age, height, and weight were entered. Analysis consisted of a logit model of estimated odds of difficult laryngoscopy within each group, allowing calculation of between group odds ratios. The likelihood ratio chi-square test was used to detect individual significant factors, with a level of  $P < 0.05$  adopted for all comparisons.

Results

Diabetes in renal recipients increased the odds of difficult laryngoscopy greater than ten-fold (0.320 diabetic vs. 0.027 nondiabetic)(Table 1). The predicted proportion of difficult laryngoscopy in diabetic patients receiving cadaver kidneys (0.419) is in close accord with that predicted for isolated cadaver pancreas recipients (0.40)(Table 2). The discrepancy between difficult laryngoscopy in diabetic living kidney recipients (0.188) vs. cadaver kidney recipients (0.419) may be accounted for by the greater age (40.8 y. vs. 31.6 y.) and duration of diabetes of cadaver recipients at the time of transplantation. No differences between groups were detected for height or weight. Although the sex of recipients was not a factor in kidney transplants, a significantly larger number of males had difficult laryngoscopy for isolated pancreas transplant (13/16 = 0.81 males). Combined renal-pancreas recipients had one difficult laryngoscopy but were not different from isolated pancreas recipients on the basis of age, height or weight.

Discussion

We have been able to locate only a single case report linking unanticipated airway complications with diabetes mellitus<sup>1</sup>. A candidate for renal transplantation is described with "stiff joint syndrome," consisting of insulin-dependent diabetes, short stature, limited joint mobility and rapidly progressive microvascular disease. The syndrome incidence in Type I diabetes is (0.332), which approximates the overall incidence of difficult laryngoscopy among diabetics in our study (0.320), although our patients were not otherwise screened for syndrome features. Presence of the syndrome correlates with duration of diabetes mellitus but not with patient sex or age<sup>2</sup>. We call attention to the exceptionally high risk for difficult laryngoscopy in this population, and urge that all measures be taken for assessment and planning for complicated airway management.

References

1. Salzarulo H, Taylor L: Diabetic 'stiff joint syndrome' as a cause of difficult endotracheal intubation. *Anesthesiology* 64:366-368, 1986.
2. Rosenbloom A: Skeletal and Joint Manifestations of Childhood Diabetes. *Pedi Clin N Amer* 31:569-589, 1984.

TABLE 1

Proportion Difficult Laryngoscopy  
Renal Recipients

	Cadaver Donor	Living Donor	Overall
Diabetic (N=71)	0.419	0.188	0.320
Non-Diabetic (N=116)	0.027	0.026	0.027

TABLE 2

Proportion Difficult Laryngoscopy  
Pancreas Recipients

	Male	Female	Both
Isolated (N=40)	0.325	0.075	0.400
Combined (N=14)	0.000	0.071	0.071