Readmission Rates Following Endoscopic, Percutaneous, and Surgical Pseudocyst Drainage

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BACKGROUND

Endoscopic ultrasound (EUS) transmural pancreatic pseudocyst drainage is increasingly being performed for patients with clinical symptoms. Limited data is known about readmissions rates of such patients when compared to other procedural techniques. We aim to assess outcomes and unplanned readmission rates of pancreatic pseudocyst drainage based on type of procedural intervention.

METHODS

The NRD database was used to identify all patients in 2016 with pancreatic pseudocyst who underwent endoscopic, percutaneous (IR), or surgical drainage. Patient selection was based on ICD-10 CM coding. Inpatient outcomes were calculated for all patients based on procedural type. Bivariate and multivariate logistic regression analysis was performed to identify independent predictors multi-day readmission rates. P value of ≤ 0.05 denotes statistical significance.

RESULTS

Of the 32139 discharges for pancreatic pseudocyst, 2220 patients underwent pseudocyst drainage - 36.2% were endoscopic, 51.6% were percutaneous, and 12.2% were surgically drained. Of these cases 4.23% required unplanned readmission within ≤30 days - 29.8% were endoscopic, 61.7% were percutaneous, and 8.5% were surgical drainage, p= 0.126.

30-day readmission rate for EUS-guided drainage was 3.5% and 5.1% for IR-guided drainage, p=0.096. Regression analysis showed index intervention by EUS-guided drainage had decreased risk for unplanned readmission at ≤ 60 days (OR 0.639, p= 0.034) and ≤ 90 days (OR 0.626, p=0.02) when compared to the IR-guided group. Adjusted multivariable regression analysis showed patients with endoscopic pseudocyst drainage (aOR 0.591, p=0.031) had an independent decreased risk of unplanned 30-day readmission, Table 2. Regression analysis showed no statistical significance of inpatient mortality when comparing EUS-guided and IR-guided pseudocyst drainage (p= 0.108).

RESULTS

Table 1: Characteristics of inpatients with pseudocyst drainage based on procedure type

		EUS-guided (n=803)	Percutaneous Imaging-guided (IR) (n=1146)	Surgical (n=271)	P value
Age, median (IQR), years		55 (43 – 66)	57 (45 – 68)	52 (43 – 64)	**0.001**
Gender, %	Male	59.9	57.4	57.9	0.542
	Female	40.1	42.6	42.1	
Hospital size, %	Small	4.2	7.7	8.2	**<0.001**
	Medium	15.5	22.4	25.3	
	Large	80.3	69.9	66.4	
Weekend admission, %		20.2	20.5	12.0	**0.003**
Teaching hospital, %		86.2	79.2	79.3	**<0.001**
Length of stay, median (IQR), days		7 (4–15)	9 (5–19)	11 (6–19)	**<0.001**
Total cost, median (IQR), $		73 332 (40843 – 139944)	77 340 (40096 – 162009)	94 281 (48098 – 228544)	**<0.001**
In-patient death, %		1.1	2.9	4.1	**0.007**
Subsequent admission procedure	Endoscopic, %	56.9	29.7	14.3	**0.001**
	IR, %	28.8	58.4	57.1	
	Surgical, %	11.5	11.9	28.6	
Readmissions	30-day, n	28	58	8	0.126
	60-day, n	34	74	9	**0.030**
	90-day, n	38	84	11	**0.021**

Table 2: Readmission rates and regression analysis comparing endoscopic versus IR pseudocyst drainage

	Endoscopic-guided Pseudocyst Drainage		IR-guided Pseudocyst Drainage	P
30-day readmission, %	3.5		5.1	0.096
60-day readmission, %	4.2		6.5	0.033
90-day readmission, %	4.7		7.3	0.017
	Endoscopic vs IR drainage Bivariable Regression OR (95%CI)	P	Endoscopic vs IR Drainage Multivariable Regression* OR (95%CI)	P
30-day readmission	0.675 (0.427 – 1.069)	0.094	0.591 (0.367 – 0.952)	**0.031**
60-day readmission	0.639 (0.421 – 0.968)	**0.034**	0.590 (0.384 – 0.907)	**0.016**
90-day readmission	0.626 (0.423 – 0.928)	**0.020**	0.570 (0.380 – 0.857)	**0.007**
In-patient mortality	0.380 (0.181 – 0.799)	**0.011**	0.533 (0.871 – 4.041)	0.108

*Adjusted for age, gender, income, comorbidities, hospital size, teaching hospital, primary expected payer

CONCLUSIONS

- Thirty-day readmissions after index hospitalization in patients undergoing EUS-guided pseudocyst drainage were at lower risk when compared to those receiving IR-guided pseudocyst drainage. Endoscopic intervention had decreased risk of unplanned readmission at day 60 and 90 after initial discharge.
- EUS therapy was shown to have an associated shorter hospital stay and decreased healthcare cost.
- Further multicenter RCT will be needed to further examine and validate these findings.