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Comparison of Conservative Management versus Drainage in Patients with Pancreatic Pseudocyst

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ABSTRACT

Objective: To compare the conservative management of pancreatic pseudocyst with active surgical intervention.

Study Design: Case series study.

Place and Duration of Study: Department of General Surgery Combined Military Hospital, Rawalpindi Pakistan, from Jan 2020 to Apr 2021.

Methodology: A total of 40 patients with pancreatic pseudocysts were included. The size of the pseudocysts, patients' age, gender, lifestyle risk factors and possible aetiology were recorded. Conservative management was offered initially. The non-regressing and complicated pseudocysts were treated surgically via radiology-assisted external drainage or surgical drainage. Relevant data via close follow-up was recorded.

Results: The mean age of the patients was 61±8.89 years. The pseudocyst size ranged from 4-17cm (median 10cm). Conservative treatment was efficacious in 15(37.5%) with shorter hospital stays (p-value<0.001). All remained pain-free during the one-year follow-up. Surgical intervention was required in 25(62.5%). Radiology-assisted external drainage employed in 15(60%), proved advantageous in 14(93.4%) patients. Recurrence was seen in one patient (6.6%). Other complications included abscess and sepsis. Surgical drainage was used in 10(40%) individuals. Complications included sepsis, abscess and intractable pain. Cumulative intervention-related complications were far higher than conservative management (14,56%, p-value 0.01). The thirty-day mortality in the study patients was 5%, all following surgical intervention.

Conclusion: Conservative management can be successfully employed to avoid the adverse sequelae associated with active interventions.

Keywords: Complications, Conservative management, Pancreatic pseudocyst, Radiological intervention, Surgical intervention.

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INTRODUCTION

Pancreatitis may present with a host of acute and chronic complications. The retroperitoneal location of the pancreas makes the management of such complications considerably challenging.[1] Pancreatic pseudocyst has been identified as one of the common unfavourable sequelae of pancreatitis. Infected pseudocysts are one the main causative factor of its post-operative morbidity.[2] Multiple attempts have been made to describe various treatment options for pancreatic pseudocysts with conflicting conclusions. Surgical drainage has been associated with various complications, namely haemorrhage, infection or rupture.[3,4] At the same time, the 2018 NICE guidelines reported that percutaneous drainage is an effective front-line treatment for pseudocysts.[5] The wide variation in pseudocyst size, its symptomatology and associated comorbidities have led to the logical conclusion that not all pseudocysts may require active intervention.[6]

A pioneering study by Bradley *et al*. stated that unopened pancreatic pseudocyst might present with adverse sequelae in 30–50% of the patients.[7] The same research reported that a pseudocyst of fewer than six weeks has better chances of spontaneous resolution than those persisting beyond 12 weeks. A study by Tan *et al*.[8] reported that the majority of pseudocysts over 6 cm in size, persisting for more than six weeks, were unlikely to resolve spontaneously and may require active intervention. Hence the size of the cyst also holds due importance in decision-making regarding the choice of treatment modality. While a local study by Yasin *et al*.[9] compared conventional surgery with interventional management for peri-pancreatic fluid collection due to pancreatitis, the data on the comparison of conservative management of pancreatic pseudocysts with surgical intervention remains sparse on national and Asian levels. The objective of this study was to report local experience and corroborate

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the already established observations regarding the conservative management of pancreatic pseudocyst compared to active intervention. Another rationale for carrying out this study was to identify efficient and potentially cost-effective modalities for treating complex and challenging ailments like pancreatic pseudocysts in healthcare delivery setups where the rationalisation of health delivery services with limited resources is paramount.

METHODOLOGY

The case series was conducted at the Department of General Surgery, Combined Military Hospital, Rawalpindi Pakistan, from January 2020 to April 2021. The Institutional Ethical Committee approved the study (ERB Ser. No. 230). The sample was collected by employing the non-probability consecutive sampling technique.

Inclusion Criteria: Patients of all age groups and either gender with pancreatic pseudocysts, based on diagnosis by Ultrasonography (USG) abdomen and Computer tomography (CT) abdomen, where required, were included in the study.

Exclusion Criteria: Those with true pancreatic cysts such as hydatid, neoplastic and congenital cysts and non-consenting individuals were excluded from the study.

A total of 40 patients of all age groups and either gender with pancreatic pseudocysts, based on diagnosis by USG abdomen and CT abdomen, where required, were included in the study. The size of the pseudocysts was recorded. Appropriate investigations, such as Barium meal, were performed in selected subjects to rule out the compression effect on the surrounding organs, namely the stomach. The demographic data was collected using a specially designed form that recorded patients' age, gender, lifestyle risk factors and possible aetiology as per history and investigations.

The conservative management of the patients included limiting enteral feed, administering intravenous fluids to maintain hydration and electrolyte balance, appropriate antibiotics and adequate pain control regimens where needed. Serial ultrasonography studies were performed to monitor any change in size, wall maturity of the cysts and other characteristics of pseudocysts.

The cysts that were non-regressing, mature, and posing any complications, such as persistent pain, gastric outlet obstruction, jaundice, weight loss, etc., were treated surgically via radiology-assisted external drainage and surgical drainage. Relevant data, such as the number of in-hospital days and the complications of each procedure, via close follow-up, were also recorded. The follow-up was carried out via clinic appointments or phone interviews.

Statistical Package for Social Sciences (SPSS) version 25.0 was used for the data analysis. Quantitative variables were expressed as Mean±SD and qualitative variables were expressed as frequency and percentages. Independent sample t-test and Chi-square test were applied to explore the inferential statistics. The *p*-value of 0.05 or less was taken as significant.

RESULTS

We observed a total of 40 cases in our study. The mean age was 61.00±8.89 years. Males accounted for 28(70%), while females 12(30%) of the cohort, indicating a higher preponderance of the disease in the male population. Acute pancreatitis was recorded in 30(75%) while chronic pancreatitis was in 10(25%) patients. Upper abdominal pain was the most common presenting symptom in our sample in 40(100%). Gallstones were identified to be the most common aetiology in 13(32.5%) patients. Other notable causes included tumours in 3(7.5%), alcohol in 3(7.5%) and hyperlipidemia in 2(5%). The pseudocyst size ranged from 4 cm to 17cm, with a median size of 10 cm. Conservative treatment was efficaciously employed in 15(37.5%) patients. All the patients remained pain-free during a follow-up of one year. It was associated with a shorter hospital stay than active intervention (*p*-value <0.001). Most patients, 12(80%), stayed in the hospital for over one to weeks compared to radiology-guided intervention and surgical drainage, where the average hospital stay was 2-3 weeks and 3-4 weeks, respectively (Table-I).

Table-I: Hospital Stays with Respective Interventions (n=40)

Intervention	Hospital Stay				*p*-value
	1 to 2 Weeks (n=12)	2 to 3 Weeks (n=17)	3 to 4 Weeks (n=7)	More than 4 Weeks (n=4)	
Conservative	12(80%)	3(20%)	0	0	<0.001
Radiology Guided Drainage	0	14(93%)	1(7%)	0	
Surgical Drainage	0	0	6(60%)	4(40%)	

Various complications and outcomes associated with respective interventions are shown in Table-II. Surgical intervention was required in 25(62.5%) of the patients. The most common indication for opting for

surgical options was persistent abdominal pain in 18(72%), followed by gastric outflow obstruction in 4(16%) and persistent dyspepsia, jaundice, and weight loss in 1(4%) of the patient. The most common surgical procedure employed in our cohort was radiology-assisted external drainage, 15(60%). No pseudocyst recurrence was recorded in the surgical drainage group over a follow-up of one year. The cumulative rate of intervention-related complications was 14(56%) in the active intervention was far higher than conservative management (*p*-value 0.01), where no complications were recorded in the immediate thirty-day period post-diagnosis. The thirty-day mortality in the cohort was 3(7.5%). All of these patients were from the surgical intervention group meaning a total mortality of 30% for this group. There was a significant association between thirty-day mortality and alcoholism in those who had surgical intervention (*p*-value <0.001).

Table-II: Various Complications and Outcomes Observed with Respective Interventions (n=40)

Intervention	Complications						Thirty day Mortality
	Recurrence (n=1)		Intractable Pain (n=4)	Abscess (n=3)	Sepsis(n=3)	Death(n=3)	
Conservative	0	1(6.6%)	0	0	0		0
Radiology-Guided Drainage	1(6.6%)	1(6.6%)	2(13%)	2(13%)	0		0
Surgical Drainage	0	2(20%)	1(10%)	1(10%)	3(30%)		3(30%)

DISCUSSION

There have been conflicting reports regarding the optimum management of pancreatic pseudocysts. Historically, many of them highlight a possible adverse outcome of conservative management.[10] While the potentially fatal ramifications associated with the conservative management of pancreatic pseudocysts may raise genuine concerns, the severe intra and post-operative complications and morbidities associated with surgical interventions cannot be overlooked.[11] It is pertinent to mention that not all patients with pancreatitis would go on to develop pseudocysts. While the data on the local incidence of pancreatic pseudocyst is lacking, it is said to be 0.5 to 1 per 100,000 adults per year.[12]

Our study, albeit smaller in sample size and of limited duration, corroborates the findings by Cheruvu *et al*.[13] that a conservative approach in managing pancreatic pseudocyst should be encouraged. Consistent with the above study, we observed zero thirty-day mortality and a shorter average hospital stay in those managed conservatively.

Earlier studies by Rasch *et al*.[14] reported a higher risk of complication with conservative management in alcoholic patients. Although our study reports similar rates of complications in alcoholics treated conservatively, a considerable number of patients with gallstone pancreatitis were also seen with similar complications when treated conservatively.

Our study emphasises that conservative management of pancreatic pseudocyst may be encouraged as pancreatic pseudocyst with up to 15 cm (median size 10cm) may remain asymptomatic and without complications when followed for eighteen months. However, conservative management should be accompanied by strenuous watchful monitoring for complications, especially in those with multiple comorbids.[15,16]

Surgical and radiological interventions may be considered in patients whose symptoms are persistent or aggravate into various complications.[17] Amongst the patient treated with surgical drainage, we found a higher incidence of intractable pain and thirty-day mortality in contrast to a study by Rasch *et al*.[14] which reported no mortality in conservatively and surgically treated patients. However, The above study reported a considerably lower re-intervention rate than the percutaneous intervention (0%,0/21 versus 26.5%, 13/49, *p*=0.007). This was consistent with our findings, where no pseudocyst recurrence was observed in the surgically treated patients, despite a relatively higher incidence of mortality. Surgically treated patients had a higher frequency of multiple comorbid in patients with pancreatic pseudocysts.[18] With the outcome of surgical and radiological interventions still being unpredictable despite the immense advances made in the above interventions, conservative management of pancreatic pseudocyst should thus be considered first-line therapy, especially in patients with multiple comorbidities.

LIMITATIONS OF STUDY

The rarity of the disease limited our study to carrying out a complete statistical scale analysis regarding pancreatic pseudocyst and the various interventions offered for it in our study. Considering associated comorbid conditions and differences in the standards of local expertise and post-operative care of such critical patients are further essential factors that must be considered in future well-controlled extensive multi-center studies.

CONCLUSION

With appropriate patient selection and monitoring, conservative management can be successfully employed in many patients, thus avoiding the multiple adverse sequelae associated with active interventions. A Conservative approach may also help reduce the hospital stay. It could be a fruitful tool in rationalising the already attenuated health services, thus reducing the burden on healthcare institutes.

Conflict of Interest: None.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

MUZ & KM: Data acquisition, data analysis, drafting the manuscript, critical review, approval of the final version to be published.

MJM & MA: Data interpretation, critical review, approval of the final version to be published.

RK & HBK: Concept and study design, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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