EDORIUM Journals
www.edoriumjournals.com

CASE REPORT PEER REVIEWED | OPEN ACCESS

Agenesis of gallbladder: A diagnostic dilemma

Atul Kumar Mittal, Dhananjay Saxena, Raju Kadam, Prashant Garg, Jeevan Kankaria, Rajkamal Jenaw

ABSTRACT

Introduction: Agenesis of gallbladder is a rare (13–65 cases/100,000) anomaly, in which about 23% patient presents with symptoms of biliary disease. In these patients, ultrasonography (USG) abdomen frequently falsely reveals shrunken or contracted gallbladder and sometimes non- visualization of gallbladder (GB) in GB fossa. Basis of these misinterpreted reports these patients undergone unnecessary surgery and may encounter iatrogenic biliary tract injuries and portal injuries because of excessive dissection to find out the absent gallbladder and ectopic gallbladder.

Case Report: A 40-year-old female attended surgical outdoor with complain of pain right hypochondrium and dyspepsia since last four years patient followed-up with USG abdomen which was suggestive of chronic cholecystitis with cholelithiasis, and common bile duct (CBD) was normal in diameter on the basis of clinical symptoms and USG findings patient admitted and planned for laparoscopic cholecystectomy. On laparoscopy after removing the adhesions, exploration done up to the porta but gallbladder could not be visualized.

On postoperative day-1 patient was sent for MRCP with MRI abdomen. On MRCP gallbladder and cystic duct were not visualized. CBD was normal in caliber. Liver and pancreas were normal. Hence the diagnosis of agenesis was made.

Conclusion: Agenesis of gallbladder is an unusual anomaly in which about 23% presents as biliary disease. These patient frequently undergone surgery because of misinterpreted reports of USG abdomen, ERCP and CT abdomen. So, in cases with ultrasonographic diagnosis of scleroatrophic or non-visualization or suspicious of ectopic gallbladder and absence of wall echo shadow (WES) triad or double arc shadow, when non-visualization of gallbladder is present during laparoscopy or open exploration intraoperative cholangiogram, intraoperative ultrasound and postoperative MRCP or Endoscopic ultrasound (EUS) can help in the diagnosis of agenesis or ectopic gallbladder.

CASE REPORT PEER REVIEWED | OPEN ACCESS

Agenesis of gallbladder: A diagnostic dilemma

Atul Kumar Mittal, Dhananjay Saxena, Raju Kadam, Prashant Garg, Jeevan Kankaria, Rajkamal Jenaw

ABSTRACT

Introduction: Agenesis of gallbladder is a rare (13–65 cases/100,000) anomaly, in which about 23% patient presents with symptoms of biliary disease. In these patients, ultrasonography (USG) abdomen frequently falsely reveals shrunken or contracted gallbladder and sometimes non- visualization of gallbladder (GB) in GB fossa. Basis of these misinterpreted reports these patients undergone unnecessary surgery and may encounter iatrogenic biliary tract injuries and portal injuries because of excessive dissection to find out the absent gallbladder and ectopic gallbladder. Case Report: A 40-year-old female attended surgical outdoor with complain of pain right hypochondrium and dyspepsia since last four years patient followed-up with USG abdomen which was suggestive of chronic cholecystitis with cholelithiasis, and common bile duct (CBD) was normal in diameter on the basis of clinical symptoms and USG findings patient admitted and planned for laparoscopic cholecystectomy. On laparoscopy after removing the adhesions, exploration done up to the porta but gallbladder could not be visualized.
On postoperative day-1 patient was sent for MRCP with MRI abdomen. On MRCP gallbladder and cystic duct were not visualized. CBD was normal in caliber. Liver and pancreas were normal. Hence the diagnosis of agenesis was made. Conclusion: Agenesis of gallbladder is an unusual anomaly in which about 23% presents as biliary disease. These patient frequently undergone surgery because of misinterpreted reports of USG abdomen, ERCP and CT abdomen. So, in cases with ultrasonographic diagnosis of scleroatrophic or non-visualization or suspicious of ectopic gallbladder and absence of wall echo shadow (WES) triad or double arc shadow, when non-visualization of gallbladder is present during laparoscopy or open exploration intraoperative cholangiogram, intraoperative ultrasound and postoperative MRCP or Endoscopic ultrasound (EUS) can help in the diagnosis of agenesis or ectopic gallbladder.

Keywords: Agenesis of gallbladder, Congenital, Absent gallbladder

Atul Kumar Mittal[1], Dhananjay Saxena[1], Raju Kadam[1], Prashant Garg[2], Jeevan Kankaria[3], Rajkamal Jenaw[4]

Affiliations: [1]MBBS, Resident, Department of Surgery, S.M.S. Medical College and Hospital, Jaipur, Rajasthan, India; [2]MBBS,MS, General Surgery, Senior Resident, Department of Surgery, S.M.S. Medical College and Hospital, Jaipur, Rajasthan, India; [3]MBBS, MS, General Surgery, Associate Professor, Department of Surgery, S.M.S. Medical College and Hospital, Jaipur, Rajasthan, India; [4]MBBS, MS, General Surgery, Professor, Department of Surgery, S.M.S. Medical College and Hospital, Jaipur, Rajasthan, India.

Corresponding Author: Dr. Atul Kumar Mittal, Department of Surgery, S.M.S. Medical College and Hospital, Jaipur, Rajasthan, India 302017; Ph: 0091- 9530033975; Email: a.mittal007@gmail.com

Received: 16 September 2014
Accepted: 27 February 2015
Published: 01 May 2015

How to cite this article

Mittal AK, Saxena D, Kadam R, Garg P, Kankaria J, Jenaw R. Agenesis of gallbladder: A diagnostic dilemma. Int J Case Rep Images 2015;6(5):296–300.

doi:10.5348/ijcri-201548-CR-10509

INTRODUCTION

Agenesis of gallbladder is a rare (13–65 cases/100,000) anomaly, about 23% patient presents with symptoms of

biliary disease [1, 2]. In these patients, ultrasonography (USG) abdomen frequently falsely reveals shrunken or contracted gallbladder and sometimes non-visualization of gallbladder in GB fossa [3]. Due to these misinterpreted reports, patients undergone unnecessary surgery, and may encounter iatrogenic biliary tract injuries and portal injuries, due to excessive dissection to find out the absent gallbladder and ectopic gallbladder [4]. Sometimes conversion to open exploration needed when an injury to biliary tract is suspected which adds morbidity to the patient. Preoperative imaging like MRCP and EUS should be considered [5]. And when such condition is encountered during intraoperatively, intraoperative cholangiography and intraoperative ultrasound can be done to rule-out agenesis and ectopic gallbladder [5].

CASE REPORT

A 40-year-old female attended surgical outdoor with complains of pain right hypochondrium and dyspepsia since last four years. Patient evaluated with USG abdomen which was suggestive of chronic cholecystitis with cholelithiasis, and CBD was normal in diameter. LFT's were with in normal limit. On the basis of clinical symptoms and USG findings patient admitted and planned for laparoscopic cholecystectomy.

On laparoscopy findings were:

1. Omentum and colonic loops were densely adherent to the inferior surface of liver (Figures 1A–B).
2. After removing the adhesions, exploration done up to the porta but gallbladder could not be visualized (Figure 2A–B).
3. Further exploration was done to rule out the ectopic gallbladder but gallbladder could not be visualized at those ectopic sites also.
4. CBD was normal in diameter.
5. Procedure terminated at this stage and decided to do postoperative MRCP in spite open conversion to prevent iatrogenic bile duct injuries.

On postoperative day-1 the patient was sent for MRCP with MRI abdomen. In MRCP findings, gallbladder and cystic duct were not visualized. CBD was normal in caliber. Liver and pancreas were normal (Figures 3A–B). Hence the diagnosis of agenesis was made.

In postoperative period patient sent for ERCP sphincterotomy. Patient followed-up for three months and she was comfortable without any episode of pain and dyspepsia. Followed up last month patient is doing well. final diagnosis was agenesis of gall bladder.

DISCUSSION

Agenesis of gallbladder was first reported by Lemery and Bergman in 1701 and 1702 respectively [2]. The incidence of agenesis in surgical cases is (0.007–0.027%) and in autopsy reports (0.04–0.13%) [6, 7]. Gallbladder develop late in first month of intrauterine life from distal part of hepatic diverticular bud of the foregut. Agenesis of gallbladder is explained by two developmental theories [8, 9]:

1. Failure of hepatic diverticula to develop into gallbladder.
2. Failure of recanalization of cystic duct and gallbladder.

Agenesis of gallbladder may present as [10]:

(1) Neonates with multiple fetal anomalies (15–16%): In these patients, agenesis usually diagnosed on autopsy because of death in perinatal period due to associated GIT, GUT, CVS, anomalies.

(2) Asymptomatic (35%): In these patients, agenesis recognized at autopsy and during laparotomy for other cause.

(3) Symptomatic (40–60%): In these patient agenesis discovered on USG abdomen, MRCP, EUS and

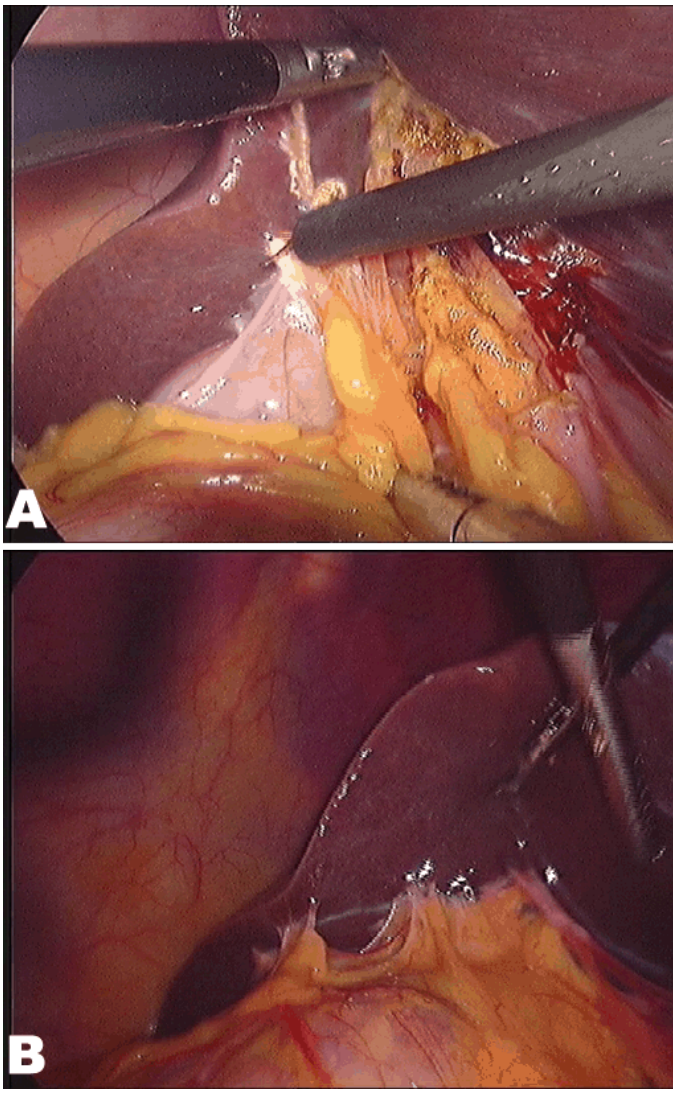

Figure 1 (A, B): Omentum and colonic loop adherent to inferior surface of liver.

during laparoscopy for evaluation of (colicky) pain right hypochondrium (90%), dyspepsia, vomiting.

Cause of pain in symptomatic patients includes biliary dyskinesia, adhesion in the GB fossa or periportal adhesions, remnant cystic duct stone and choledocholithiasis. ERCP sphincterotomy and adhesiolysis resolved the pain in these patients [11]. Agenesis of gall bladder is associated with congenital syndromes cerebrotendinous xanthomatosis, G-syndrome, Klippel–Feil syndrome, trisomy 18 and some cases reported after thalidomide therapy [12–15]. On laparoscopy if gallbladder is not visualize in GB fossa, dissection should be carried out up to the porta and usual sites for ectopic gallbladder, which are intrahepatic, retrohepatic, left sided, or within the falciform or lesser omentum, to prove the agenesis of gallbladder [8]. But sometimes this dissection is lead to major biliary tract injuries. So, excessive dissection and open exploration is avoided. On USG and CT abdomen diagnosis of agenesis is limited by bowel gas artifacts due to adhesions at liver bed which makes shadowy opacities, periportal tissue,

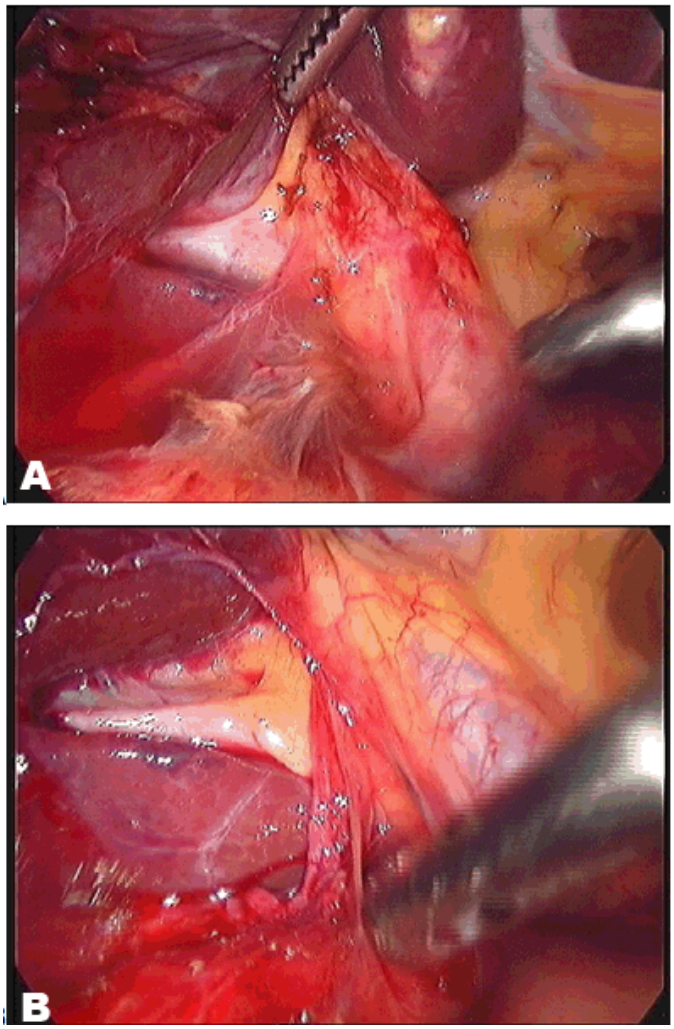

Figure 2: (A, B) CBD dissected up to the porta hepatis. Both right and left hepatic duct seen, but gallbladder and cystic duct are not visualized.

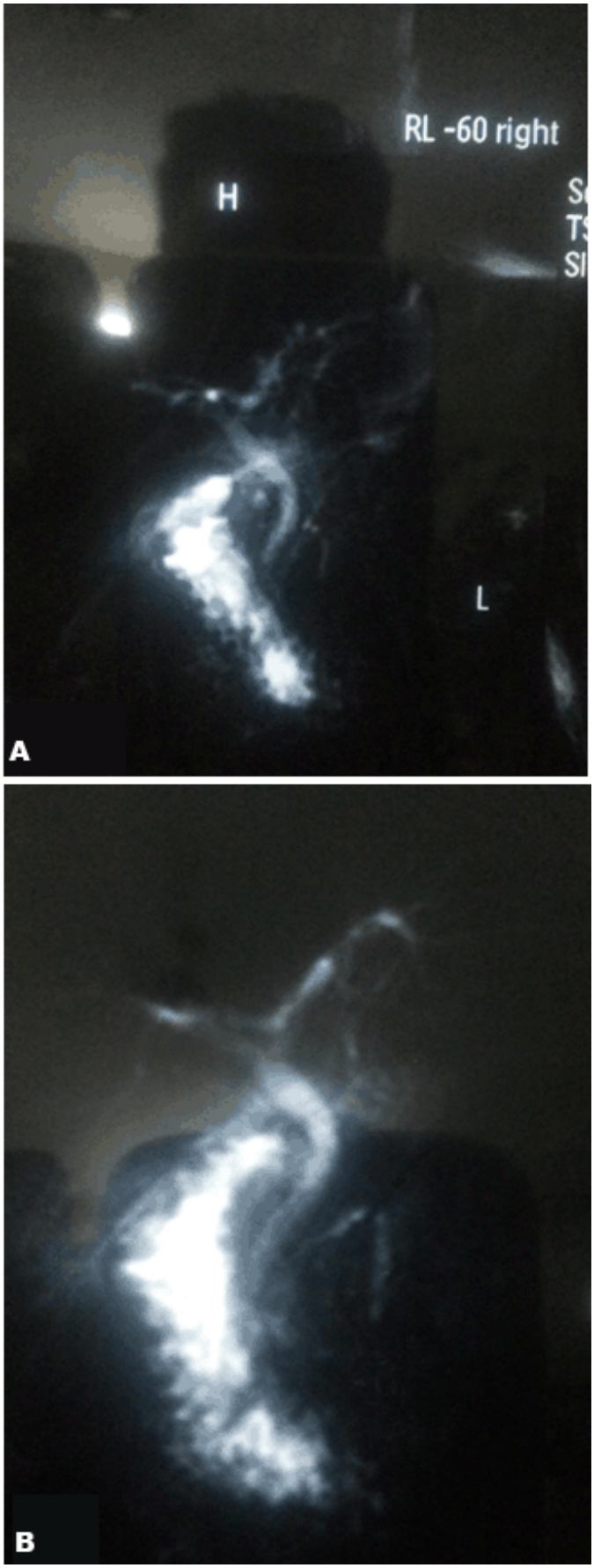

Figure 3: (A, B) MRCP films showing normal CBD and absence of cystic duct and gallbladder.

lipoma, liver hemangioma or migrated liver tissue [10, 16–18]. ERCP contributes little in diagnosis of agenesis because nonvisualization of gallbladder is interpreted as cystic duct obstruction [19].

MRCP is non-invasive and best method to delineate intrahepatic and extrahepatic biliary tract. Preoperative MRCP should be considered in cases of USG diagnosis of non-visualization of gallbladder [20]. Other diagnostic modality includes EUS,intra-op ultrasound and selective arteriography can be used for agenesis. But their availability is less [19]. There were some cases reported in which AGB was diagnosed preoperatively and the operation was avoided [16].

Agenesis of gallbladder is an unusual anomaly of which about 23% presents with biliary disease [2]. It is sometimes associated with anomalies of other system also and seems to be familiar inheritance [21]. These patient frequently undergo surgery because of misinterpreted reports of USG abdomen, ERCP and CT abdomen. So, in cases with ultrasonographic diagnosis of scleroatrophic or nonvisualization or suspicious of ectopic gallbladder and absence of WES triad or double arc shadow, Further preoperative investigation like MRCP and EUS should be done to rule out agenesis and ectopic gallbladder to avoid unnecessary surgery and iatrogenic biliary injuries.

CONCLUSION

When nonvisualization of gallbladder is present during laparoscopy or open exploration intra-operative cholangiogram, intraoperative ultrasound and postoperative MRCP or endoscopic ultrasonography (EUS) can help in the diagnosis of agenesis or ectopic gallbladder.

****

Author Contributions

Atul Kumar Mittal – Substantial contributions to conception and design, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Dhananjay Saxena – Substantial contributions to conception and design, Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Raju Kadam – Substantial contributions to conception and design, Revising it critically for important intellectual content, Final approval of the version to be published

Prashant Garg – Substantial contributions to conception and design, Revising it critically for important intellectual content, Final approval of the version to be published.

Jeevan Kankaria – Substantial contributions to conception and design, Revising it critically for important intellectual content, Final approval of the version to be published.

Rajkamal Jenaw – Substantial contributions to conception and design, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

Copyright

REFERENCES

1. Richards RJ, Taubin H, Wasson D. Agenesis of the gallbladder in symptomatic adults. A case and review of the literature. J Clin Gastroenterol 1993 Apr;16(3):231–3.
2. Nadeau LA, Cloutier WA, Konecki JT, Morin G, Taylor RW. Hereditary gallbladder agenesis: Twelve cases in the same family. J Maine Med Assoc 1972 Jan;63(1):1–4.
3. Jackson RJ, McClellan D. Agenesis of the gallbladder. A cause of false-positive ultrasonography. Am Surg 1989 Jan;55(1):36–40.
4. Latimer EO, Mendez FL Jr, Hage WJ. Congenital absence of gallbladder: Report of three cases. Ann Surg 1947 Aug;126(2):229–42.
5. Wilson JE, Deitrick JE. Agenesis of the gallbladder: case report and familial investigation. Surgery 1986 Jan;99(1):106–9.
6. AhlbergJ,Angelin B, Einarsson K, Leijd B. Biliary lipid composition and bile acid kinetics in patients with agenesis of the gallbladder with a note on the frequency of this anomaly. Acta Chir Scand Suppl 1978;482:15–20.
7. Ferris DO, Glazer IM. Congenital absence of gallbladder. Four surgical cases. Arch Surg 1965;91:359–61.
8. Gotohda N, Itano S, Horiki S, et al. Gallbladder agenesis with no other biliary tract abnormality: Report of a case and review of the literature. J Hepatobiliary Pancreat Surg 2000;7(3):327–30.
9. Gilbert Scott F. Developmental Biology. 5th Ed. Sunderland (MA): Sinauer Associates Inc 1997;9:382–3.
10. Bennion RS, Thompson JE Jr, Tompkins RK. Agenesis of the gallbladder without extrahepatic biliary atresia. Arch Surg 1988 Oct;123(10):1257–60.
11. Vijay KT, Kocher HH, Koti RS, Bapat RD. Agenesis of gallbladder--a diagnostic dilemma. J Postgrad Med 1996 Jul-Sep;42(3):80–2.

12. Winter RB, Baraitser M. Multiple congenital anomalies. A diagnostic compendium. First Ed Cambridge: Chapman and Hall Medical 1991;109.
13. Turkel SB, Swanson V, Chandrasoma P. Manifestations associated with congenital absence of the gallbladder. J Med Genet 1983 Dec;20(6):445–9.
14. Sterchi JM, Baine RW, Myers RT. Agenesis of the gallbladder - an inherited defect? South Med J 1977 Apr;70(4):498–9.
15. Kreipe U. Abnormalities of internal organs in thalidomide embryopathy. A contribution to the determination of the sen-sitivity phase in thalidomide administration during early pregnancy. Arch Kinderheilkd 1967 Aug;176(1):33–61. [Article in German].
16. Fiaschetti V, Catabrese G, Viarani S, Bazzocchi G, Simonetti G. Gallbladder agenesis and cystic duct absence in an adult patient diagnosed by Magnetic Resonance Cholangiography: Report of a case and review of the literature. Case Rep Med 2009;2009:674768.
17. Stephenson JA, Norwood M, Al-Leswas D, et al. Hepatic haemangioma masquerading as the gallbladder in a case of gallbladder agenesis: A case report and litereature review. HPB Surg 2010;2010. pii: 971609.
18. Shaher Z. Gallbladder anomalies; agenesis, hourglass and liver tissue migration: A multimedia article. The Internet Journal of Surgery 2005;7:1.
19. Peloponissios N, Gillet M, Cavin R, Halkic N. Agenesis of the gallbladder: A dangerously misdiagnosed malformation. World J Gastroenterol 2005 Oct 21;11(39):6228–31.
20. Malde S. Gallbladder agenesis diagnosed intra-operatively: A case report. J Medical Case Reports 2010;4:285.
21. Wilson JE, Deitrick JE. Agenesis of the gallbladder: case report and familial investigation. Surgery 1986 Jan;99(1):106–9.

Edorium Journals: An introduction

Edorium Journals Team

About Edorium Journals

Edorium Journals is a publisher of high-quality, open access, international scholarly journals covering subjects in basic sciences and clinical specialties and subspecialties.

Invitation for article submission

We sincerely invite you to submit your valuable research for publication to Edorium Journals.

But why should you publish with Edorium Journals?

In less than 10 words - we give you what no one does.

Vision of being the best

We have the vision of making our journals the best and the most authoritative journals in their respective specialties. We are working towards this goal every day of every week of every month of every year.

Exceptional services

We care for you, your work and your time. Our efficient, personalized and courteous services are a testimony to this.

Editorial Review

All manuscripts submitted to Edorium Journals undergo pre-processing review, first editorial review, peer review, second editorial review and finally third editorial review.

Peer Review

All manuscripts submitted to Edorium Journals undergo anonymous, double-blind, external peer review.

Early View version

Early View version of your manuscript will be published in the journal within 72 hours of final acceptance.

Manuscript status

From submission to publication of your article you will get regular updates (minimum six times) about status of your manuscripts directly in your email.

Our Commitment

Six weeks

You will get first decision on your manuscript within six weeks (42 days) of submission. If we fail to honor this by even one day, we will publish your manuscript free of charge.

Four weeks

After we receive page proofs, your manuscript will be published in the journal within four weeks (31 days). If we fail to honor this by even one day, we will publish your manuscript free of charge and refund you the full article publication charges you paid for your manuscript.

Mentored Review Articles (MRA)

Our academic program "Mentored Review Article" (MRA) gives you a unique opportunity to publish papers under mentorship of international faculty. These articles are published free of charges.

Favored Author program

One email is all it takes to become our favored author. You will not only get fee waivers but also get information and insights about scholarly publishing.

Institutional Membership program

Join our Institutional Memberships program and help scholars from your institute make their research accessible to all and save thousands of dollars in fees make their research accessible to all.

Our presence

We have some of the best designed publication formats. Our websites are very user friendly and enable you to do your work very easily with no hassle.

Something more...

We request you to have a look at our website to know more about us and our services.

We welcome you to interact with us, share with us, join us and of course publish with us.

Edorium Journals: On Web

Browse Journals

CONNECT WITH US