



Figure S1: Prisma flow chart

Table S1: Acute appendicitis associated with dengue infections

Article No	Author (Year) Country	Age (Years)	Gender	Clinical Presentation	Examination	Investigations	Surgical Interventions	Days of hospital stay	Outcome	Key findings	Complications
1	Kang (2009) Korea	36	Male	Fever + RIF pain for 3D	Conjunctival injection Vitals Normal	PLT = 143, Hb = NL PCV = NL	None - IV fluids, analgesics	6	Recovered	CT - Normal appendix	None
2	McFarlane (2013) Jamaica	13	Male	Fever + Abdominal pain and Vomiting x 3D	PR = 109, BP = NL Tender RIF with mild guarding	PLT = 119, WBC = 2.1 Hb, PCV = NL USS = Appendix not visualized	Appendicectomy	NA	Recovered	Normal appendix enlarged mesenteric nodes	None
3	Kumarasena (2014) Sri Lanka	12.5	Male	Fever + Abdominal pain for 1D	Vitals = NL, RIF guarding and tenderness	PLT = 195	Open appendicectomy Re-exploration after 36h due to increased peritonism	12	Recovered	Histology - Acute appendicitis features	Generalized peritonitis due to appendicectomy No bowel injury found. Managed with lavage
4	Senanayake (2014) Sri Lanka	8	Male	Abdominal pain + Vomiting and fever for 4D	Hess test positive Tender hepatomegaly	WBC = 4 PLT = 86 PCV = 42% Liver enzymes = Mild elevation	None - Managed conservatively with Antibiotics, interval appendicectomy planned	13	Recovered	USS - Appendicular mass	None
5	Kumar (2015) India	17	Male	Fever + RIF pain x 2D	PR = 122, BP = 188/70 Tender RIF	PLT = 102, Hb = 14 PCV = 51 USS = Appendix was	Open appendicectomy	8	Recovered	Histology - Normal appendix	None

						not visualized					
6	Yen (2016) Malaysia	17	Female	Fever x 6D Abdominal pain + Vomiting x 3D	BP = 129/75, PR = 75 Lower abdominal tenderness No guarding	WBC = 3.8 HB = 7.4 PCV = 26% PLT = 168	Emergency open appendicectomy	7	Recovered	Histology - acute appendicitis	Perforated appendicular mass with pus was found intra op
7	Fidel (2017) Spain	18	Male	Fever and abdominal pain	Rovsing sign and Dunphy sign positive	USS Abdomen = Appendicular process	Open appendicectomy	NA	Recovered	Histology = Acute ulcerative appendicitis	None
8	Albalawi (2018) Saudi Arabia	17	Female	Fever + Abdominalpain + Vomiting x 2D	PR = 110 BP = 110/75 Tender RIF, Mild guarding	HB = NL, PCV = NL USS = Appendix not visualized CT Abdomen = Dilated appendix	None - IV fluids, analgesics and antipyretics given to manage refractory fever	8	Recovered	Follow-up CT Abdomen showed resolution of inflammation	None

NA = Not available; SD = Standard deviation; RIF= Right iliac fossa; PLT= Platelet count ($\times 10^9/L$); D=Days; Hb = Haemoglobin level (in g/dl); CT = Computed tomography; NL = Normal; PCV = Packed cell volume; CECT = Contrast enhanced computed tomography; PR = Pulse rate (in beats per minute); USS = Ultrasound scan; MRI = Magnetic resonance imaging; BP = Blood pressure (in mm/Hg); WBC = White blood cell count ($\times 10^6/L$); IV = Intravenous

Table S2: Acute cholecystitis associated with dengue infections

Article No	Author (Year) Country	Age (Years)	Gender	Clinical Presentation	Examination	Investigations	Surgical Interventions	Days of Hospital stay	Outcome	Key findings	Complications
1	Sood (2000) India	25	Male	RHC pain for 3D with high grade fever	PR = 110, BP = 140/86 Tender RHC + guarding Hepatomegaly	Hb = 12.4, HCT = 55 AST = 140, ALT = 94 ALP = 186, Amylase = NL ABG = NL USS = Acute acalculous cholecystitis	None	5	Recovered	USS - Acute acalculous cholecystitis	None
2	Tan (2005) Singapore	45	Female	RHC pain and fever x 5D	PR = 100, BP = 68/45 Tender RHC + guarding + Murphy's sign USS = Acute acalculous cholecystitis	PCV = 48%, PLT = 26 ALT, AST, ALP = Slight elevation Prolonged APTT Normal PT	None	6	Recovered	USS - Acute acalculous cholecystitis	None
3	Goh (2006) Singapore	59	Female	RHC pain on fever D5	Tender RHC Murphy's sign + Hemodynamics stable	Hb = 14.3, PLT = 60 ALP = 437 ALT = 215, AST = 418 Amylase, Coagulation = NL CT = acute cholecystitis, no stones	Emergency open cholecystectomy	7	Recovered	Histology = Acute acalculous cholecystitis	None
4	Berrington (2007) USA	29 Primigravida @ 13W POG	Female	Right upper quadrant pain on fever D8	RUQ tenderness	PLT = 17 AST = 319, ALT = 198, Lipase = 22 ALP = 74 MRI + Abdominal USS = Acalculous cholecystitis	None	5	Recovered	MRI + USS - Gallbladder wall thickening but no cholelithiasis	None - had uncomplicated vaginal delivery at 40w

5	Karunatilake (2007) Sri Lanka	48	Female	RUQ pain on D4 of fever	NA	AST = 101, ALT = 148 PLT = 34 ALP = 296, USS= Thick Gall bladder wall	None	7	Recovered	USS - Acute acalculous cholecystitis	None
6	Rehman (2007) Singapore	15	Male	Fever x 3D RHC pain on D4	BP = 80/60 Tenderness, guarding and rebound tenderness	PLT = 13, High transaminase(6 times) USS= Thick Gall bladder	None	NA	Recovered	USS - Acute acalculous cholecystitis	None
7	Rehman (2007) Singapore	23	Female	RHC pain on Fever D8	RHC rebound tenderness Shock	PLT = 13, Transaminases 10 times USS = Thick Gall bladder	None	NA	Recovered	USS - Acute acalculous cholecystitis	None
8	Nasim (2009) Pakistan	50	Female	Abdominal pain on fever D2	PR = 100, BP = 100/60 RHC tenderness	Hb = 14.3, ALP = 507 ALT = 65, Amylase = 59 USS = acute acalculous cholecystitis	None	4	Recovered	USS - Acute acalculous cholecystitis	None
9	Koh (2011) Brunei	18	Female	Fever and Abdominal pain x 3D	BP: 95/60 pulse rate -112 respiratory rate- 22 Mild epigastric tenderness, no guarding	PLT = 81, LFT = NL USS = Acute acalculous cholecystitis	None	10	Recovered	USS - Acute acalculous cholecystitis	None
10	Marasinghe (2011) Sri Lanka	29 @ 29W POG (P2)	Female	RHC Pain on fever D3	Tender RHC, + Murphy's sign No guarding, BP = 110/70 PR = 80	PLT = 264, Hb = 10.3, PCV = 41% USS - Acute acalculous cholecystitis	None	NA	Recovered	USS - Acute acalculous cholecystitis	None - later had uncomplicated vaginal delivery

11	Schmidt (2011) Germany	21	Female	Abdominal pain and fever	NA	PLT = 17, AST = 1444 Alt = 834, USS = acute acalculous cholecystitis	Cholecystectomy	11	Died	Post mortem diagnosis of dengue was made	Due to suspected cholecystitis with sepsis, cholecystectomy was done and post op clinical condition rapidly deteriorated due to severe spontaneous bleeding from abdominal wound. Despite resuscitation patient died.
12	Das (2013) India	22	Female	RUQ Pain and fever x 3D	Mild pallor, no icterus Vitals = normal Guarding and tenderness over RUQ	Hb = 10.8, PCV = 68% PLT = 180, ALP = 90 AST = 435, ALT = 342 Amylase, lipase = mild elevation, Coagulation normal CT = Acute acalculous cholecystitis	None	14	Recovered	CT - Acute acalculous cholecystitis	None
13	Kuna (2016) Poland	58	Female	Epigastric pain	BP = 100/65, PR = 112 Tender whole abdomen No guarding (-) Murphy's sign	PLT = 47, GGT = 1086 AST = 1793, ALP = 522 USS = Thick GB wall	Exploratory laparotomy	7	Recovered	Intra op - No gallbladder pathology	None
14	Mostafi (2017) Bangladesh	38	Female	Fever x 10D Abdominal pain x 2D	PR = 100 BP = 100/60 Diffuse tender abdomen + Murphy sign	PLT = 70 USS = acute acalculous cholecystitis. ALP = 232 ALT = 289 Amylase = 122	None	11	Recovered	USS - Acute acalculous cholecystitis	None

15	Deshmukh (2018) India	47	Male	RUQ pain + fever x 10D	PR = 120 severe tenderness in right hypochondrium with guarding & rigidity	USS = Mildly enlarged liver, distended GB LFT = NL CECT abdomen - acalculous cholecystitis with focal contained perforation	ERCP Exploratory laparotomy and cholecystectomy	10	Recovered	Biopsy of gall bladder-myonecrosis with features of inflammation	Perforation of GB at fundus/body junction and small bowel adhesions were found intra operatively
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USA = United States of America; NA = Not available; POG = Period of gestation; RHC = Right hypochondrium; RIF = Right iliac fossa; RUQ = Right upper quadrant; PLT = Platelet count ($\times 10^9/L$); D = Days; Hb = Haemoglobin level (in g/dl); CT = Computed tomography; NL = Normal; PCV = Packed cell volume; CECT = Contrast enhanced computed tomography; PR = Pulse rate (in bpm); USS = Ultrasound scan; MRI = Magnetic resonance imaging; BP = Blood pressure (in mm/Hg); BC = White blood cell count ($\times 10^6/L$); AST = Aspartate transaminase (in U/L); ALT = Alanine transaminase (in U/L); ALP = Alkaline phosphatase (in U/L); GGT = Gamma glutamyl transferase (in U/L); HCT = Haematocrit; ABG = Arterial blood gas; APTT = Activated partial thromboplastin time; PT = Prothrombin time; ERC = Endoscopic retrograde cholangiopancreatography; GB = Gall bladder; IV = Intravenous

Table S3: Pancreatitis associated with dengue infections

Article No	Author (Year) Country	Age (Years)	Gender	Clinical Presentation	Examination	Investigations	Surgical Interventions	Days of Hospital stay	Outcome	Key findings	Complications
1	Jusuf (1998) Indonesia	24	Female	Fever and hematemesis x 5D	Hematoma on left leg	Hb = 13.4, PCV = 42% PLT = 22.5, Amylase = 317 U/L Lipase = 1198 U/L, Glucose = 397mg/dL CT = Acute pancreatitis	None	18	Recovered	CT = Acute pancreatitis	None
2	Chen (2004) Taiwan	66	Female	Fever + Epigastric pain + vomiting	NA	LFT = abnormal Serum biochemistry = Acute pancreatitis Thrombocytopenia	None	NA	Recovered	NA	None
3	Seetharam (2010) India	56	Male	Epigastric pain x 1D Fever developed on 3rd day of admission	Tenderness and guarding of epigastrium, no organomegaly No Free fluid	Amylase = 832 U/L, Lipase = 1298 U/L LFT = NL CECT Abdomen = acute pancreatitis Dengue serology +	None	8	Recovered	CT = Acute pancreatitis	None
4	Wijekoon (2010) Sri Lanka	47	Male	Fever x 1 week Abdominal pain x 3D	Abdominal distention Tenderness and guarding Hepatomegaly 3cm Mild dehydration No pallor, no jaundice BP = 90/60 PR = 105, low Volume	USS Abdomen = Enlarged pancreas Peri pancreatic fluid no ascites Amylase = 1381 RBS = 358 PLT = 32 PCV = 45% WBC = 4200 Neutrophil = 88% AST = 192 ALT = 122 CRP = 96	None	21	Recovered	USS - Acute pancreatitis	Melena - was managed with PPI and platelet transfusions. Resolved within one week.

5	Agrawal (2011) India	38	Male	Fever x 10D Abdominal pain + Vomiting x 3D	Tachypnea, Petechial rashes over trunk and Lower limb, BP = 100/60 PR = 100, RR = 40 B/L diffuse crackles Abdominal distention + tenderness	PLT = dropped Lipase = elevated AST, ALT, PT, APTT = NL ABG = Type 1 respiratory failure USS abdomen = acute pancreatitis CXR = Bilateral infiltrates	None	15	Recover	USS - Acute pancreatitis	Acute lung injury managed with mechanical ventilation for 7 days
6	Gonzalez (2011) Colombia	27	Male	Fever + hematemesis + rectal bleeding x 4D	BP = 102/71, PR = 91 RR = 15, epigastric tenderness Petechiae on arms and legs	PLT = 9.6 Hb = 22.4 Amylase = 187 U/L, Lipase = 514 U/L Endoscopy = Hemorrhagic pangastropathy CECT Abdomen = changes in pancreas	None	13	Recover	CT = Changes in peri pancreatic fat	Hemorrhagic thrombocytopenic pangastropathy and DIC managed in ICU conservatively
7	Kodisinghe (2011) Sri Lanka	35	Male	Fever + epigastric pain x 4D	Flushing, icterus Hepatomegaly, RIF tenderness, ascites, BL pleural effusion	Thrombocytopenia NCCT brain = cerebral odema LFT = hepatitis pattern amylase = 1800 U/L	None	13	Recover	USS - Acute pancreatitis	Cerebral odema with liver failure managed at ICU with routine fluid management and anti-liver failure regimen.
8	Karoli (2012) India	35	Female	Fever + Epigastric pain + vomiting x 5D	Cold peripheries, PR = 126 BP = 70/50, RR = 22 Diffuse abdominal tenderness	Hb = 11.2 PCV = 38% PLT = 26, AST = 128, ALT = 83 Sugar = 186mg/dL Amylase = 906 U/L, Lipase = 1112 U/L CT, USS abdomen = acute pancreatitis	None	16	Recover	CT + USS - Acute pancreatitis	None

9	Simadibrata (2012) Indonesia	59	Male	Fever x 4D, Epigastric pain x 1D	BP = 10/80, PR = 100 RR = 20	Hb = 13, PCV = 56% PLT = 120, AST = 80, ALT = 90, Amylase = 654 U/L Lipase = 780 U/L CT = Pancreatitis	None	11	Recover	CT = Pancreatitis	None
10	Lee (2013) Taiwan	47	Male	Fever x 2D, Melena and epigastric pain x 4D	NA	MRI abdomen = Hemorrhagic pancreatitis Dengue serology +	NA	NA	NA	MRI abdomen = Hemorrhagic pancreatitis	Hemorrhagic pancreatitis with intramural hematoma in the second part of the duodenum
11	Jain (2014) India	27	Male	Fever + Upper abdominal pain x 4D	Cold extremities PR = 106, BP = 86/60 Abdominal distention Tenderness, no guarding nor rigidity, hepatomegaly 6cm, splenomegaly Grade 1	Hb = 12.2, PLT = 62 PCV = 38.5% Amylase = 1574 U/L, Lipase = 832 U/L USS = Pancreatitis Scr = 2.6 mg/dl = AKI	None	NA	Died	USS - Acute pancreatitis	Upper GI bleeding Shock AKI and severe metabolic acidosis
12	Anam (2015) Bangladesh	20	Male	Fever x 8D Severe abdominal pain x 3D	BP = 85/70, PR = 110 RR = 26 Saturation = 88% Tender epigastrium ascites, left pleural effusion	PLT = 84, PCV = 21% Amylase = 830 U/L, Lipase = 6587 U/L	Chest drain due to Pleural effusion	8	Recover	CT - Acute Pancreatitis	Blood tinged exudative pleural effusion with mediastinal shift - managed with intubation and mechanical ventilation

13	Kumar (2016) India	10	Female	Fever + vomiting x 1D	Vitals normal, Hepatosplenomegaly	Hb = 9.7, PLT = 66 AST = 43737, ALT = 318 Amylase = 284 U/L, Lipase = 421 U/L USS Abdomen = Acute pancreatitis	None	19	Recovered	NA	None
14	Sudulagunta (2016) India	30	Male	Low GCS (5/15) and fever x 6D	SBP = 70, Cyanosis RR = 38, PR = 136 Bibasal crepitations	Hb = 10.3, PLT = 9 Amylase = 2350 U/L, Lipase = 975 U/L RBS = 200 CT = Pancreatitis	None	10	Recovered	CT = Pancreatitis	SIRS and B/L pleural effusion, AKI, Shock and MODS
15	Kumar (2017) India	32	Female	Fever x 2D Abdominal pain + vomiting x 4D	Tender and guarding in epigastric region	Amylase = 1788 U/L, Lipase = 94 U/L PLT = 41 AST = 168 ALT = 98 ALP = 162	None	8	Recovered	NA	None
16	Krithika (2018) India	11	Male	Acute epigastric pain 10 days after being discharged following dengue	Sluggish bowel sounds	Amylase = 900 U/L Lipase = 670 U/L CT = Acute pancreatitis	None	NA	Recovered	CT = Acute pancreatitis	None
17	Nawal (2018) India	25	Male	Fever x 3D Abdominal Pain x 2D	BP = 124/86 PR = 120 RR = 18 Epigastric tenderness No guarding	Amylase = 605 U/L Lipase = 1612 U/L AST - 203 ALT - 237 CECT abdomen was obtained which revealed diffusely bulky pancreas with heterogeneous attenuation	None	10	Recovered	NA	None

18	Correa (2019) Panama	37	Female	Acute epigastric pain on 5th day of fever	BP = 110/80 PR = 72 RR = 20	PLT - 88 Amylase 225 U/L, Lipase 917 U/L, AST- 138 ALT - 105 Lactate dehydrogenase (LDH) 1397U/L	None	NA	Recovered	NA	None
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NA = Not available; RBS= Random blood sugar; CRP= C-Reactive protein (mg/L); PPI= Proton pump inhibitor; CXR= Chest X ray; Scr= Serum creatinine; AKI= Acute kidney injury; LFT= Liver function test; RR= Respiratory rate (per minute); BL= Bilateral; NCCT= Non-contrast computerized tomography; ICU= Intensive care unit; DIC= Disseminated intravascular coagulation; SIRS= Systemic inflammatory response syndrome; MODS= Multi organ dysfunction syndrome; SGOT = AST; AST = Aspartate transaminase (in U/L); SGPT = ALT; ALT = Alanine transaminase (in U/L); RIF = Right iliac fossa; PLT = Platelet count (x10⁹/L); D = Days; Hb = Haemoglobin level (in g/dl); CT = Computed tomography; NL = Normal; PCV = Packed cell volume; CECT = Contrast enhanced computed tomography; PR = Pulse rate (in bpm); USS = Ultrasound scan; MRI = Magnetic resonance imaging; BP = Blood pressure (in mm/Hg); SBP = Systolic blood pressure (in mm/Hg); BC = White blood cell count (x10⁶/L); RUQ = Right upper quadrant; RHC = Right hypochondrium; ALP = Alkaline phosphatase (in U/L); GGT = Gamma glutamyl transferase (in U/L); HCT = Haematocrit; ABG = Arterial blood gas; APTT = Activated partial thromboplastin time; PT = Prothrombin time; ERC = Endoscopic retrograde cholangiopancreatography

Table S4: Splenic rupture associated with dengue infections

Article No	Author (Year) Country	Age (Years)	Gender	Clinical Presentation	Examination	Investigations	Surgical Interventions	Days of Hospital stay	Outcome	Key findings	Complications
1	Redondo (1997) Venezuela	23	Female	Acute abdomen and shock on fever D5	BP = 80/40 Dehydration	Hb = 6.5 PCV = 18.3% PLT = 42 Progressed to multi organ failure with Gram (-) sepsis USS = intra-abdominal bleeding	Two exploratory laparotomies	NA	Death	Histology - Normal spleen with tear with no evidence of granuloma of malignancy	Developed Gram (-) sepsis, Respiratory distress syndrome Renal failure, Liver failure Multifocal bleeding encephalopathy
2	Couverlard (1999) France	39	Male	Fever for 6D, Acute abdomen on D6	NA	AST = 595, ALT = 541 PLT = 29	Laparotomy + Splenectomy	8	Death	Histology: The Spleen Showed Multiple Parenchymal Hematomas, the Liver Showed Marked Focal Necrosis, Other Organs Showed Minor Lesion	Post operatively developed shock, liver failure and renal failure
3	Miranda (2003) Brazil	52	Female	Acute abdomen on D6 of fever	Pallid skin and mucosa Filiform pulses Low BP, Abdominal distention diffuse abdominal tenderness	CT abdomen = diffuse ascites and large splenic hemorrhage Low PCV, Hb, PLT with normal amylase	exploratory laparotomy and splenectomy	NA	Recovered	Histology - Normal spleen, no granuloma No malignancy	None

4	Rapp (2003) France	23	Male	LHC pain	BP = 110/80 PR = 80 Tender splenomegaly	Hb = 11, PLT = 360 CT abdomen= splenic sub capsular hematoma	None	10	Recovered	CT = Sub capsular hematoma of spleen without hemoperitoneum	None
5	Rapp (2003) France	24	Male	LHC pain and fever	Splenomegaly = 6cm	USS = Sub capsular hematoma of spleen	None	15	Recovered	CT = Sub capsular hematoma of spleen without hemoperitoneum	None
6	Rapp (2003) France	35	Male	Right chest pain on fever D8	PR = 72 BP = 110/80	PLT = 115 USS = sub capsular hematoma	None	20	Recovered	Histology - Normal spleen with tear	None
7	Apatcha (2008) Thailand	24	Male	Diffuse abdominal pain+shock on D6 of fever	BP = 85/54	PCV = 25%, PLT = 21 AST = 787 ALT = 281 PT, APTT = prolonged AKI	exploratory laparotomy and splenectomy	7	Death	Histology = splenic rupture No granulomas, no malignancy	Shock and AKI prior to operation Post op developed MODS and severe multifocal bleeding
8	Seravali (2008) Brazil	27	Male	Abdominal pain with generalised myalgia	Pallid skin and mucosa Filiform pulses Low BP, abdominal distention diffuse abdominal tenderness	Dengue viral serology positive	Exploratory laparotomy and splenectomy	30	Recovered	Histology - Follicular hyperplasia congested sinusoids and hemorrhagic focus	None

9	Seravali (2008) Brazil	20	Male	RIF pain on fever D6	Pallid skin and mucosa Filiform pulses Low BP	PCV normal. Hb normal PLT = 46.8 Amylase = NL AST = 3694 ALT = 1240 USS = Moderate ascites enlarged spleen CT = splenic hematoma	Explorat ory laparoto my and splenecto my	16	Recov ered	Histology - Multiple hemorrhagic foci Chronic inflammation with extensive necrosis	Bilateral effusion, liver hemorrhage, renal cortical hematoma
10	Sharma (2008) India	29	Female	Recurrent melena and fever x 7 days	No icterus No lymphadeno pathy Mild hepatomega ly Shifting dullness	PLT = 90 PCV = 33% CT = Ascites, splenic rupture and thrombosis	None	NA	Recov ered	NA	Bilateral pleural effusion
11	Naik (2010) India	25	Male	Abdominal pain + distention + shock on fever D9	Low BP, abdominal distention Hepatomega ly	PCV = 15% PLT = 25 CT = ascites and splenic rupture	Emergen cy laparoto my and splenecto my	13	Recov ered	NA	None
12	Liyanage (2011) Sri Lanka	30	Male	Abdominal distention and shock on fever D6	SBP = 80 mmHg	Hb 6	Laparoto my + Splenect omy	14	Recov ered	Histology - Normal spleen with capsular tear	Prior to surgery went in to refractory shock with anuria and intra- abdominal hypertension

13	Mendonca (2011) Brazil	33	Male	Upper abdominal pain on D8 fever	Postural hypotension Lower limb and facial edema Dyspnea BP = 80/40 PR = 160 RR = 40 Abdominal distention and tenderness	PCV = 49.8% PLT = 27 Albumin = 2.5 g/dL GGT = 223 ALT = 404	None	NA	Death	Histology = splenic rupture	Shock and generalized tonic clonic convulsion
14	Bhaskar (2012) India	26	Male	Abdominal pain on fever D5	PR = 120 BP = 100/80 RR = 34 Diffuse tender abdomen No guarding nor rigidity	Hb = 12.5 PCV = 37% PLT = 40 Bilirubin Total = 0.9 mg/dL ALT = 80 ALP = 130 AST = 60 USS = possible hematoma or abscess of spleen CT = Splenic rupture with intra and peri splenic hematoma	Splenectomy	14	Recovered	Histology - Normal architecture No hyperplasia, cellular infiltrate, hematological malignancy	Prior to surgery went in to shock
15	Gopie (2012) West indies	22	Male	Abdominal pain, bilious vomiting and diarrhea on fever D6	BP = 90/50 PR = 120 RR = 28 Tense, tender, distended abdomen	PLT = 78 Hb = 5 CT = Splenic rupture with hemoperitoneum	Emergency laparotomy and splenectomy	12	Recovered	No splenic histology data available	None
16	Anam (2013) Bangladesh	52	Male	Fever for 4D, abdominal pain for 6 hours	PR = 140, BP = 80/50 RR = 26	Hb = 14.3, PLT = 56 ALT = 48, AST = 64 CT = splenic rupture	Emergency laparotomy and splenectomy	14	Recovered	Histology = Normal	None

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17	Mukhopadhyay (2014) India	26	Female	Abdominal pain on D5 of fever	Severe pallor, PR = 120 BP = 90/60 Diffuse abdominal tenderness Tachypnea Ascites, HSM	Hb = 3.4 PLT = 40 PCV = 12.2% LFT = NL CT abdomen = splenic collection APTT, PT = NL	None	7	Recovered	NA	None
18	Silva (2015) Sri Lanka	28	Male	Abdominal pain and distention of dengue D7	BP = 80/60 PR = 140 Distended severely tender abdomen	Hb = 8.8 PCV = 26% PLT = 90 Normal coagulation profile USS + CT abdomen = Free fluid in peritoneum and splenic hematoma	Emergency laparotomy and splenectomy	12	Recovered	Histology - Normal spleen	Prior to surgery went in to shock
19	De souza (2017) Brazil	23	Male	Worsening abdominal pain and shock on D7 of fever	Diffuse abdominal tenderness, dehydration, tachycardia, tachypnea	PLT = 29 PCV = 35%, Hb = 12.5 AST = 591, ALT = 450 Bilirubin = 3.1 mg/dL (direct = 1.9) Amylase = 90 U/L	Laparotomy + Splenectomy	NA	Recovered	Histology = Sub capsular coagulant necrosis Acute splenitis, capsular fibrin deposition extensive areas of hemorrhage, follicular atrophy in the central arteriole	None

NA = Not available; SBP = Systolic blood pressure (in mm/Hg); LHC = Left hypochondrium; RBS= Random blood sugar; CRP= C-Reactive protein (mg/L); PPI= Proton pump inhibitor; CXR= Chest X ray; Scr= Serum creatinine; AKI= Acute kidney injury; LFT= Liver function test; RR= Respiratory rate (per minute); BL= Bilateral; NCCT= Non-contrast computerized tomography; ICU= Intensive care unit; DIC= Disseminated intravascular coagulation; SIRS= Systemic inflammatory response syndrome; MODS= Multi organ dysfunction syndrome; SGOT = AST; AST = Aspartate transaminase (in U/L); SGPT = ALT; ALT = Alanine transaminase (in U/L); RIF = Right iliac fossa; PLT = Platelet count ($\times 10^9/L$); D = Days; Hb = Haemoglobin level (in g/dl); CT = Computed tomography; NL = Normal; PCV = Packed cell volume; CECT = Contrast enhanced computed tomography; PR = Pulse rate (in bpm); USS = Ultrasound scan; MRI = Magnetic resonance imaging; BP = Blood pressure (in mm/Hg); WBC = White blood cell count ($\times 10^6/L$); RUQ = Right upper quadrant; RHC = Right hypochondrium; ALP = Alkaline phosphatase (in U/L); GGT = Gamma glutamyl transferase (in U/L); HCT = Haematocrit; ABG = Arterial blood gas; APTT = Activated partial thromboplastin time; PT = Prothrombin time; ERC = Endoscopic retrograde cholangiopancreatography

Table S5: Other surgical manifestations in patients with dengue fever

Article No	Author (Year) Country	Study type/Study period	n/N	Age	Male	Surgical Presentations	Other findings	Surgical Interventions	Other interventions	Prolonged Hospital stay	Deaths
1	Wang (1990) Taiwan	Retrospective/3 months	91/238	Range: 8 - 72 years Mean: 34.4 years	NA	Upper GI bleeding - 28	Endoscopic findings Hemorrhagic gastritis -27 Peptic ulcer - 10	NA	NA	NA	NA
2	Tsai (1991) Taiwan	Retrospective/1 year	NA/198	NA	NA	Upper GI bleeding - 26	Endoscopy revealed most had gastric and/or duodenal ulcers and/or superficial and hemorrhagic gastritis. 13 patients had history of peptic ulcer symptoms.	Laparotomy - 1	Supportive therapy and blood products transfusion	NA	0
3	Alam (2002) Bangladesh	Retrospective/8 months	2/NA	Range: 20-50+ years	NA	1 - Hollow viscus perforation of undermined location 1- multiple gangrenous jejunal perforation	X ray -Findings suggestive of viscus perforation such as air under diaphragm	Surgical repair	NA	NA	NA
4	Chiu (2005) Taiwan	Retrospective/7.5 months	NA/1156	Range: 20-80 years	47	Upper GI bleeding - 97	Endoscopic findings Peptic ulcer - 73 and patients had combinations of peptic ulcer, hemorrhagic/erosive gastritis, duodenal ulcer and esophageal ulcer	Endoscopic injection -15	Supportive therapy and blood products transfusion	NA	2

5	Sari (2008) Indonesia	Case report	NA	27 years	Male	Upper GI bleeding	Endoscopy Esophagitis and mild erosive gastritis	Nil by mouth and NGT insertion	IV crystalloids, and PPI	NA	0
6	Ahmad (2013) Pakistan	Retrospective/3 3 months	121/875	Mean: 34.79 years Range: 18-70 years SD: 12.21 years	NA	Abscess - 14 Upper GI bleed-13 PR Bleeding-11 Anterior abdominal wall haematoma-3, Abdominal compartment syndrome-2, Retroperitoneal haematoma-2	None	Abscess drainage - 14, Percutaneous drainage of haematoma- 1, Laparotomy for bleeding duodenal ulcer-1, Ligation of actively bleeding haemorrhoids -2	Supportive therapy and blood products transfusion	NA	2
7	Anurag (2014) India	Case report	NA	40 years	Male	Rectus sheath hematoma	USS Abdomen - elliptical parietal echogenic lesion with fluid level involving the right side of abdomen CT Abdomen - hematoma	None	NA	No	0

8	Jain (2014) India	Case report	NA	64 years	Female	Multiple jejunal perforations	X ray abdomen- dilated bowel loops with multiple air fluid level. No air under diaphragm. Ultrasound abdomen - moderate ascites with fluid filled dilated bowel loops	Emergency laparotomy, resection of perforated segments, rest of the bowel segments were brought out as stomas and feeding jejunostomy was inserted.	NA	NA	0
9	Koshy (2014) India	Case report	NA	39 years	Male	Bilateral iliacus and left iliopsoas muscle hematoma	MRI - hematomas in the bilateral iliacus and left iliopsoas muscle	None	Platelet transfusion and analgesics	No	0
10	Waseem (2014) Pakistan	Case report	NA	55 years	Male	Rectus sheath hematoma	CT Abdomen - Right rectus sheath hematoma	Surgical repair of inferior epigastric artery leak	Blood product transfusion	No	0
11	Mandhane (2015) India	Case report	NA	17 years	Male	Gastric perforation	X ray - Air under diaphragm	Laparotomy and repair	NA	NA	0
12	Piyush (2016) India	2 Case reports	NA	10,7 years	Female, Male	Ileal perforation	X ray - pneumoperitonium and free gas under diaphragm	Exploratory laparotomy and primary repair	NA	No	0
13	Chiun (2017) Malaysia	Case report	NA	39 years	Male	Perforated gastric ulcer	CECT Complex ascites with extra luminal air	Laparotomy and repair	IV crystalloids, IV antibiotics IV colloids, blood product transfusion and inotropes	NA	0

14	Elmakki (2017) Saudi Arabia	Case report	NA	48 years	Male	Upper GI bleeding	Endoscopy No varices, ulcer or vascular abnormalities	None	IV crystalloids, and blood product transfusion	No	0
15	Kaur (2017) India	Case report	NA	55 years	Female	Rectus sheath hematoma	USS Abdomen - Collection in left rectus sheath	USS guided aspiration	None	No	0
16	Lim (2017) Malaysia	Case report	NA	73 years	Female	Upper GI bleeding	Endoscopy Active oozing duodenal ulcer and GOJ junction erosion	Endoscopic clipping and adrenalin injection	Cold saline infusion Inotropic support Blood product transfusion	NA	0
17	Nelwan (2017) Indonesia	Case report	NA	58 years	Female	Rectus sheath hematoma	CT Abdomen, MRI-Hematoma in rectus abdominis	None	Analgesics	NA	0
18	Singh (2017) India	Retrospective/2 months	6/NA	Range: 22-74 years	3	Surgical wound bleed - 2 Upper GI bleeding - 1 Ascites - 1	None	Gastro duodenoscopy - 1	Supportive therapy and blood products transfusion	4	2
19	Zahidy (2017) Saudi Arabia	Retrospective/14 months	11/1250	NA	30	Upper GI bleeding - 75	Endoscopic findings 35 - confirmed hemorrhagic gastritis	Endoscopic injection -9	Supportive therapy and blood products transfusion	NA	15
20	Kularatne (2018) Sri Lanka	Case series	NA/10	Mean: 27 years Range: 12 - 51 years	4	Upper GI bleeding - 2	Acute severe hepatitis Severe septic shock Myocarditis Intracranial bleeding Diarrhea	None	IV crystalloids, and blood product transfusion	NA	0

21	Pallivalappi 1 (2018) India	4 Case reports	NA	Range: 53-67 years	2	1 - Left rectus sheath hematoma and right psoas hematoma 1 - Left lower chest wall and anterolateral abdominal wall hematoma 1 - Right psoas hematoma 1 - Retroperitoneal hematoma extending to left psoas muscle	NA	1 - Endovascular embolization under general anesthesia for retroperitoneal hematoma.	3 - Conservative management with IV fluids, FFP and analgesia	NA	0
22	Pillai (2019) India	Case report	NA	12 years	Female	Gastric perforation	X ray - Air under diaphragm bilaterally	Laparotomy and repair	NA	NA	0

NA = Not available; n = Dengue with Acute abdomen; N = DF/DHF cases; SD = Standard deviation; GI = Gastro intestinal; PR = per rectal; CA = Carcinoma; USS =Ultrasound scan; CT = Computed tomography; CECT = Contrast enhanced computed tomography; MRI = Magnetic resonance imaging; IV = Intravenous; FFP = Fresh frozen plasma; GOJ = Gastro esophageal junction; NGT = Naso gastric tube; PPI = Proton pump inhibitors;