

APPENDICITIS

Appendicitis, a disease affecting, primarily, young adults was one for which soldiers were frequently hospitalized. In the 12th General Hospital there were 217 cases treated, 122 of these being treated in Africa, 58 in Rome and 37 in Leghorn.

Table I; Incidence of Appendicitis:

: Africa	:	122	:
: Rome	:	58	:
: Leghorn	:	37	:
: TOTAL	M:	217	:

Of these 217 cases of appendicitis 117 cases were operated on at the 12th General Hospital, 93 were operated on at the other hospital installations and 7 cases were not operated upon. In one of the cases not operated upon, the patient was suffering from severe, acute bronchitis and by the time the bronchitis had improved to permit surgical intervention, the appendicitis had subsided. The remaining unoperated cases were considered subsiding at time of the first examination and surgery was deemed unnecessary.

Table II; Place of Operation:

:	: Africa	: Rome	: Leghorn	: Total	:
: Cases operated on at	:	:	:	:	:
: 12th General Hospital	: 62	: 25	: 30	: 117	:
: Cases operated on	:	:	:	:	:
: elsewhere	: 57	: 31	: 5	: 93	:
: Cases not operated on	: 3	: 2	: 2	: 7	:
: TOTAL	: 122	: 58	: 37	: 217	:

Although acute appendicitis usually attacks its victim while he is active about his regular duties, it is interesting that 24 or 11.52% of the 217 cases occurred while the soldier was already a patient in the hospital receiving treatment for wounds received in battle, for accidental injuries or for other diseases. Appendicitis complicated 11 cases of battle casualties, 6 cases of accidental injury and 7, other diseases. Of these 7 cases of other disease, 4 were cases of gall bladder disease and 3 were cases of genitourinary disease and its complications.

Table III; Appendicitis in Hospitalized Patients:

: Battle casualties	4	:	:
: Accidental injuries	5	:	:
: Africa : Diseases	4	: 13	:
: (acute G.C.urethritis)	1	:	:
: (gall bladder disease-	3)	:	:
: Battle casualties	5	:	:
: Accidental injury	1	:	:
: Rome : Diseases	2	: 8	:
: (Prostatitis - 1)	:	:	:
: (gall bladder disease-	1)	:	:
: Battle casualties	2	:	:
: Accidental injuries	0	:	:
: Leghorn : Diseases	1	: 3	:
: (post G.C. inguinal	:	:	:
: adenitis)	:	:	:

DIAGNOSIS:

Final diagnosis of the condition of the diseased appendix as given in the accompanying table, was made from gross examination of the organ at the time of operation, except in the cases of subsiding appendices. Seven of these 13 cases were not operated upon, but they are placed in the category of subsiding cases from their histories.

Table IV; Pathology of the Appendices:

Pathology	Africa	Rome	Leghorn	Total
1. Acute catarrhal appendicitis	43	26	12	81
2. Acute suppurative appendicitis	36	23	14	73
3. Acute gangrenous appendicitis	9	0	1	10
4. Acute gangrenous appendicitis, perforated with or without abscess.	10	4	3	17
5. Acute subsiding appendicitis including 2 normal appendices	9	2	2	13
6. Chronic appendicitis	11	1	5	17
7. Malignant appendix	0	1	0	1
8. Incidental appendectomy	4	1	0	5
TOTAL	122	58	37	217

The first four categories of Table IV need no special comment as they were all clear-cut cases of acute appendicitis.

Subsiding Appendicitis:

Six cases of the 13 cases of subsiding appendices were operated upon. Of these, 2 appeared grossly normal, while the 4 remaining were bound down by adhesions and showed signs of subsiding inflammation.

Chronic Appendicitis:

The 17 cases of chronic appendicitis showed varying degrees of peri appendicular adhesions, and scarring and constricting bands in the appendix itself.

Malignant Case:

A 41 year old female (WAC) on admission to the 12th General Hospital gave a history of 2 weeks of lower abdominal pain accompanied by anorexia, abdominal distension and fever. Physical examination revealed tenderness, rigidity and a mass in the right lower quadrant of the abdomen. Pelvic examination was negative. A provisional diagnosis of acute appendicitis with abscess was made. On opening the abdomen the peritoneum and the bowel were studded with grayish, vesicular nodules. The appendix with a nodule from the cecum was removed. A diagnosis of pseudo myxoma peritonei ex appendicis vermiformis was made. Postoperative recovery proved uneventful. The patient was sent to the Zone of Interior as future trouble was anticipated.

This case occurring in military life recalls similar cases in civilian life, where one is always suspicious of malignancy of the cecum in an otherwise healthy middle-aged person, who presents himself for the relief of symptoms and signs of a not too virulent inflammation of the appendix. In the case of a female patient a pseudomyxomatous cyst of the ovary would suggest itself.

Incident Appendectomies:

Four appendices were removed at the time of cholecystectomy operation for gall bladder disease. One appendix temptingly presented itself on the opening of a right inguinal hernia sac and was promptly removed.

DURATION OF SYMPTOMS PRIOR TO OPERATION:

The time interval between the onset of symptoms and surgical intervention was accurately recorded only in 127 cases of the total of 217 cases. Of these, 86 cases or 67.75% were operated on within the first 24 hours after onset of

symptoms; 14 or 11.02% were operated on the second day after onset; 8 or 6.29% on the third after onset; 9 or 7.08% on the fourth day, and ten or 7.86% thereafter. This holds true more than likely for the entire series as soldiers were at all times easily accessible to hospital installations, and once they sought relief were operated on promptly.

Table V; Time between Onset of Symptoms and Operation:

:		: 24 hrs	: 48 hrs	: 72 hrs	: 96 hrs	: 96 hrs	/: Total :
:	No. of						
:	cases	: 86	: 14	: 8	: 9	: 10	: 127 :
:	%	: 67.75	: 11.02	: 6.29	: 7.08	: 7.86	: 100.00:

PREVIOUS ATTACKS:

Record of previous attacks was not made in enough cases of this series to draw any conclusions in this regard. On account of the youthful age of the majority of the soldiers, previous attacks of acute appendicitis, more than likely had occurred rarely.

OPERATION:

Surgical approach, whether a McBurney or right rectus incision was made, was recorded in so few cases no definite statement, as to method of approach used, can be made.

In 177 cases simple appendectomy was performed with primary closure of the operative wound. In 22 cases the appendix was removed and drainage of the abdomen was instituted. In 5 cases simple incision and drainage of the appendiceal abscess was done. In one case an acutely inflamed appendiceal stump was removed the initial partial appendectomy having been performed several years previously. In five cases the appendix was removed incidentally while the abdomen was open during a cholecystectomy operation or repair of a right inguinal hernia. Seven cases of subsiding appendices were not operated upon.

The several operations were performed in many different hospital installations under varied conditions, yet, the results were uniformly good.

Table VI; Type of Operation Performed:

: Appendectomy	:	177	:
: Appendectomy with drainage	:	22	:
: Incision and drainage of appendiceal abscess	:	5	:
: Removal of appendiceal stump	:	1	:
: Incidental appendectomy	:	5	:
: No operation	:	7	:
:	TOTAL	:	217 :

HOSPITAL DAYS:

The 217 patients presenting symptoms of acute appendicitis spent 5522 days in the 12th General Hospital or an average of 25.44 hospital days. The average number of hospital days of patients treated in Africa, Rome and Leghorn, respectively, is also given in Table VII.

Table VII; Hospital Days of Patients with Appendicitis:

:	Place	: No. of Patients	: Total Hosp Days	: Average No., Hosp Days:
:	Africa	: 122	: 2964	: 24.29
:	Rome	: 58	: 1475	: 25.43
:	Leghorn:	: 37	: 1083	: 29.27
:	TOTAL:	: 217	: 5522	: 25.44

DISPOSITION OF CASES:

Of the total number of 217 cases treated for appendicitis 164 or 75.58% returned to A (combat) duty. Nineteen cases or 8.75% returned to temporary B

duty with the hope they would soon be returned to A duty. Six cases or 2.76% were returned to permanent B duty on account of some complication which prevented them from doing A duty. Twenty-six cases or 11.99% were transferred to the Zone of Interior, no hope being entertained of returning them to any kind of duty in this theatre. Two cases or 0.92% died.

Table VIII; Disposition of Cases of Appendicitis:

: Type of duty	: Africa	: Rome	: Leghorn	: Total	: Percent	:
: "A"	: 83	: 50	: 31	: 164	: 75.58	:
: B temporary	: 15	: 0	: 4	: 19	: 8.75	:
: B permanent	: 4	: 1	: 1	: 6	: 2.76	:
: Zone, Interior:	18	7	1	26	11.99	:
: Death	: 2	: 0	: 0	: 2	: 0.92	:
: TOTAL	: 122	: 58	: 37	: 217	: 100.00	:

DISPOSITION OF CASES OTHER THAN THOSE RETURNING TO A DUTY:

B Temporary Duty:

Cases which were sent to temporary B duty with the hope of their being reclassified to A duty later were cases in which the operative wound had not completely healed; general physical weakness following complications, e.g., delayed healing and intestinal obstruction; disabling associated accidental injuries; battle casualty wounds or complicating diseases, such as, mild psychoneurosis, hepatitis, cystitis, bronchitis, etc.

B Permanent Duty:

Cases which were considered permanently disabled and could not be returned to A duty were given permanent B duty classification on account of complicating conditions such as pes planus, metatarsalgia, psychoneurosis, and renal calculus in which the stone was still present in the urinary tract.

Zone of Interior:

Patients judged unfit for further duty in this theatre were sent to the Zone of Interior because of draining sinuses from appendiceal wounds, postoperative hernia in healed wound, retained appendices in cases where incision and drainage of appendiceal abscess, alone, was done; postoperative complications such as general physical weakness following severe peritonitis and intestinal obstruction and pulmonary infarct.

Accompanying disabling accidental injuries and serious battle casualty wounds were responsible for several cases being sent out of this theatre.

Serious complicating diseases, e.g., epilepsy, psychoneuroses, were responsible for others being sent to the Zone of Interior.

One of the cases of incidental appendectomy along with cholecystectomy proved to be a B paratyphoid cancer.

A more detailed tabular account of disposition of other than A duty cases is found in Tables IX, X, and XI.

Table IX; Dispositions Other Than A Duty in Africa:

1. <u>B Temporary - 15 cases:</u>		
Wound still draining	5	
Associated knee injury	3	
Psychoneurosis	1	
Hepatitis	1	
General weakness and delayed healing	1	
General weakness and intestinal obstr.	1	
Battle wound, right thigh	1	
Mesenteric lymph adenitis	1	
Postop. cystitis and bronchitis	1	
	<u>15</u>	
2. <u>B Permanent - 4 cases:</u>		
Psychoneurosis	3	
Flat feet - metatarsalgia	1	
	<u>4</u>	

Table IX cont'd:

3. <u>Zone of Interior - 18 cases:</u>		
Gastroenteritis, chronic, severe	3	
Prolonged drainage of postoperative sinus	5	
Burn complication to eye and right hand	1	
Battle wound	1	
Ventral hernia, postoperative	1	
General weakness with prolonged peritonitis and intestinal obstruction	1	
Psychoneurosis	2	
Epilepsy	1	
B paratyphoid cancer	1	
Operation: retrocecal not removed. ZI'd for 2ndary operation	<u>2</u>	
		18
4. <u>Deaths - 2 cases:</u>		
Overwhelming sepsis		2

Table X ; Dispositions Other Than A Duty in Rome:

1. <u>B temporary: No cases:</u>			0
2. <u>B permanent: 1 case:</u>			
Febricula and pes planus	<u>1</u>		1
3. <u>Zone of Interior - 7 cases:</u>			
Battle wounds demand patients be ZI'd (appendix not found in one case)	3		
Generally weak abdomen (sec. suture necessary)	1		
Pulmonary infarct and bilateral thrombo- phlebitis	1		
Crushing foot injury	1		
Malignancy (pseudomyxoma)	<u>1</u>		
			7
4. <u>Deaths - None</u>			0

Table XI ; Dispositions Other Than A Duty in Leghorn:

1. <u>B temporary: 4 cases:</u>			
Psychoneurosis	1		
Prolonged drainage	<u>3</u>		
			4
2. <u>B permanent: 1 case:</u>			
Renal calculus			1
3. <u>Zone of Interior - 1 case:</u>			
Battle wound			1
4. <u>Deaths - None:</u>			0

DEATHS:

Two deaths from ruptured appendices and subsequent overwhelming sepsis occurred in Africa.

The first of these deaths occurred in the case of an American Officer who after suffering two days with a mild type of acute upper respiratory infection developed generalized colicky pains in his abdomen accompanied by fever (Temp: 100.4 degrees F.) and generalized abdominal tenderness.

The medical officer of his battalion aid station considered his trouble to be due to constipation and gave him one ounce of castor oil and 15 grains of aspirin. The following day, his condition became more serious and he was admitted to the 12th General Hospital. A diagnosis of acute appendicitis with perforation was made and the patient was prepared for immediate operation. The patient tolerated his anesthesia poorly, was seized with sudden, severe chill (rectal temperature, 107 degrees F.) and died of respiratory failure. His appendix was found to be gangrenous and perforated and complicated by extensive peritonitis characterized by marked hyperemia and injection of all parietal and aerosal vessels with minimal fluid. The second of these deaths occurred in an American enlisted man who at the time he was seen in an Evacuation Hospital behind the forward lines was already in a very serious condition. He sought relief of severe pain in his right flank and abdomen. He was feverish and gave signs of severe sepsis. A perinephric abscess was suspected of being the cause of his symptoms and this diagnosis was made more firm in the mind of the examining officer after he inserted a needle into the region of the right kidney and secured a purulent exudate. The perinephric abscess was drained. The patient was admitted to the 12th General Hospital the following day in a very serious condition, suffering from peritonitis and generalized sepsis. He developed a right scrotal abscess which was drained. In spite of supportive treatment the infection became overwhelming and the patient died on the seventh day after admission to the 12th General Hospital. Postmortem examination revealed a ruptured gangrenous, retrocecal appendix, bilateral perinephric abscesses, a retroperitoneal phlegmon and abscess, and a right rectus sheath abscess which had gravitated into the right inguinal region and the scrotum.

SUMMARY:

Two hundred and seventeen cases of appendicitis were treated in the 12th General Hospital. The disease, being one of the most common surgical diseases in civilian life, occurred frequently also in military life.

Twenty-four cases, or 11.52% of the total number of cases occurred while the patient was hospitalized on account of accidental injuries, battle casualty wounds, or other diseases.

One hundred and seventeen cases, or 53.92%, were operated on at the 12th General Hospital; 93 cases, or 42.86%, were operated on at other hospitals, and 7, or 3.22%, of cases were not operated upon.

The majority of the cases were operated on promptly after the onset of symptoms. Of 127 cases in which the time interval between onset of symptoms and operation were accurately recorded, 100 cases, or 78.77%, were operated on within the first 48 hours of the disease.

Examination of the gross specimen of the appendix at time of operation showed of 217 cases -

181, or 83.50%, were acutely inflamed, diseased condition varying from acute catarrhal to acute gangrene perforated with abscess.

The remaining 36, or 16.50% were acute subsiding, chronic, malignant or incidental.

In 183 cases, or 84.33%, the operative wound was closed primarily. In 27 cases, or 12.44%, drainage was instituted at the time of operation.

Seven cases were not operated upon.

The average number of hospital days per patient was 25.44 days.

189 cases, or 87.09%, were returned to duty; 164, or 75.88% to A duty and 19, or 8.75% to B duty.

26 cases, or 11.99%, were returned to the Zone of Interior.

Two, or 0.92%, died. The two deaths were due to rapidly progressing, overwhelming generalized sepsis.