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Armando Rossi · Giorgio Rossi

# CT of the Peritoneum

Foreword by  
A.E. Cardinale and A.L. Baert

With 425 Figures in 1418 Separate Illustrations, Some in Color



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Continuation of  
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## Foreword

I have not embarked on the foreword to this scientific monograph by Armando and Giorgio ROSSI in the expectation that it will be an easy task, because these two authors are the last remaining members of a family that has left its mark in the field of radiology in our country: therefore, the writer's enthusiasm and detachment could be jeopardized by memories of his own teachers and elders and the respect he still feels towards them.

The line stretches from Armando Rossi Sr., a pioneer in the field of radiology in Italy, a scientist and a versatile teacher, a student of Beclère and Busi, to Lucio Rossi, an eminent teacher, a learned man and a gentleman. An official biography of Armando Rossi shows that in his last years, his wide didactic interests were directed towards his own family, leading him to devote his attention to those of his grandchildren who were then getting ready to embrace the medical profession.

The passion and the pedagogic skills of this past master have left long-lasting signs, as is evident in the volume "Computed tomography of the peritoneum." This splendid book presents a complete and updated survey of diagnosis by means of CT of the peritoneum: this text is unique in the Italian radiology literature, because up to now this subject matter has been treated only patchily. This brilliant book is written with originality and with scrupulous accuracy, not without an organic and scholarly bent to synthesis in a field described up to now only in notes and not allocated more than small amounts of space.

A look through these pages immediately makes it obvious how profoundly the approach to diagnosis of the peritoneum has changed since the days of the traditional radiology taught to us by our teachers, and how CT has enriched our knowledge and extended the armamentarium at our disposal for dealing with diagnosis in this field.

The very rich graphic material and the large number of clinical cases on which this book is based are the fruits of long and patient work devoted to the collection, selection, and classification of clinical material and an in-depth analysis, all of which was certainly not done in a short time, also demonstrating the authors' profound competence. Indeed, it is this expertise that has permitted them to deal with difficult and sometimes complex arguments in a simple and comprehensible way.

The development of the text follows a logical and systematic scheme: the first part consists of four chapters that are essential for the understanding of what is presented later: "Normal Anatomy," "Physiology and Physiopathology of the peritoneum," "CT Study Techniques," and "CT Anatomy."

The second part comprises nine chapters dealing with a systematic discussion of primary and secondary pathology of the peritoneum. Particular emphasis is given to effusions and acute and chronic inflammatory processes. Then follows a careful, close examination of posttraumatic peritoneal and subperitoneal lesions in which CT, when associated with clinical and hemodynamic investigations, proves to be a technique of fundamental importance for selection of the treatment.

After an exhaustive examination of nonneoplastic pathologies, particular attention is given to the classification and evaluation of herniae; in these circumstances CT clarifies the nature and the characteristics of swellings in the abdominal wall and yields information that is valuable preoperatively. The book ends with an analysis of benign and malignant tumors of the peritoneum, which can originate from numerous embryonic structures.

Overall, the book is an up-to-date work with a very high cultural niveau, but nonetheless versatile and easy to read.

Particular care has been given to the selection and reproduction of the illustrations: these are unusual in their clarity, being presented with didactic insight and accompanied by informative legends.

Not only the clarity and the essential nature of the presentation but also the wealth of literature references – for use in any in-depth study – will recommend this volume selectively to specialists in the field. Such specialists will be able to adhere to balanced and specific indications in their use of CT and – while remaining within correct diagnostic protocols – will be able to complement CT with other methods to study the pathology of the peritoneum.

Older, and eminent students of Armando Rossi Sr. will recall his assertion that it is not possible to practice a profession well without loving it. This volume on CT of the peritoneum, a truly comprehensive treatise on this subject matter, demonstrates how a love of radiology has been transmitted "genetically" in this scientific family saga.

For all these reasons, I am pleased to record my appreciation of the authors, who have infused into this book the enthusiasm and expertise that have matured in the course of their daily work and research.

I hope the book will be well received by its readers and will be for them a source of satisfaction and of motivation towards increasingly earnestly desired and well-deserved scientific goals.

A. E. CARDINALE

## Foreword

The peritoneal cavity is an anatomical space involved in a large variety of medical and surgical conditions and has been the focus of much radiological research in the past.

The advent of cross-sectional imaging and more specifically of CT has, however, completely changed the approach of the radiologist to the different diagnosis and the management of many pathological conditions involving the peritoneum.

This volume presents the results of many years of innovative clinical research by the authors in the field of peritoneal pathology, which is covered in comprehensive fashion.

I sincerely hope that this book will meet the expectations of all those interested in updating their knowledge on the peritoneum. I am convinced it will be an excellent tool for the daily clinical work of the general and abdominal radiologist; in addition it merits the interest of abdominal surgeons, oncologists and gastroenterologists.

I wish this book the same success as the previous volumes in our series "Medical Radiology".

I welcome any constructive criticism that might be offered.

Leuven

ALBERT L. BAERT

# Preface

Even though many years have passed since the introduction of CT, few authors have dedicated themselves to the assessment of its systematic application in the study of the peritoneum.

Following both a family tradition and scholastic tradition, the almost life-long habit of interpreting radiological data on the basis of problems arising from clinical observations (with the collaboration of highly competent colleagues) has given us the incentive to systematically gather together the results of the observations we have made and of the teachings we have received in a single work.

It has been difficult, but extremely useful, to re-examine the numerous case studies and histories tested and monitored over so many years, to make a selection, to undertake an accurate evaluation of the results obtained in them and to compare our results with those published in the literature.

The data have been organized in two parts according to a general pre-established scheme: the first part is introductory, including information on the normal anatomy, physiology, physiopathology and CT anatomy of the peritoneum and of the subperitoneal spaces; the second part is dedicated to primary and secondary pathology of the peritoneum.

A great deal of attention was devoted to solutions to the wide range of problems that occur most frequently in daily practice or which sometimes overwhelm clinicians and radiologists because they are so difficult to solve and their solutions are so urgent: from the anatomical to the physiological study, from the functional to the inflammatory aspect, from the detection of the benign or malignant nature of tumoral forms and of their precise location and extension to the possibility of determining how they relate to organs and apparatuses before surgical operations and indicating what clinically silent complications may be encountered.

An accurate CT study of the abdominopelvic pathology, besides the pathology of the organ -- often already known from a simple echographic examination or through conventional radiological techniques -- should always assess the involvement of the peritoneum, the ligaments, the mesenteries, and the subperitoneal spaces; these elements often have a decisive role in the choice of the most suitable treatment.

The extensive bibliography contains reports from Anglo-Saxon, Asiatic and European authors.

Overall, we have tried to realize a simple, but thorough-going work, from which we hope practitioners will derive elements that will be useful and make for easier daily practice.

Parma

ARMANDO ROSSI · GIORGIO ROSSI



# Contents

Section 1: <b>Introduction</b> .....	1
1 Normal Anatomy .....	3
2 Physiology and Physiopathology of the Peritoneum .....	43
3 CT Techniques .....	47
4 CT Anatomy .....	51
Section 2: <b>Primary and Secondary Pathology of the Peritoneum</b> .....	135
5 Fluid Collections .....	137
6 Acute Inflammatory Diseases .....	165
7 Chronic Inflammatory Diseases .....	199
8 Peritoneal and Mesenteric Trauma .....	217
9 Other Nonneoplastic Pathologies .....	231
10 Abdominal Herniae .....	253
11 Cysts .....	279
12 Primary Tumors .....	299
13 Diffusion of Malignant Tumors of Intraperitoneal Organs to the Peritoneum, Ligaments, Mesenteries, Omentum and Lymph Nodes .....	353
Subject Index .....	405

# Abbreviations

## **Ligaments, Mesenteries and Fasciae**

### **Supramesocolic**

an	retrohepatic bare area
ft	transverse fascia
lco	coronal ligament
led	hepatoduodenal ligament
lf	falciform ligament
lgc	gastrocolic ligament
lge	gastrohepatic ligament
lgs	gastrosplenic ligament
lr	round ligament
lt	triangular ligament
mt	transverse mesocolon

### **Submesocolic**

flc	lateroconal fascia
fov	umbilicovesical fascia
fso	supraumbilical fascia
o	greater omentum
me	mesentery
ma	ascending mesocolon
md	descending mesocolon
ms	sigmoid mesocolon

### **Pelvic subperitoneal**

ar	ala recti
fp	pelvic fascia
fpp	prostatoperitoneal (Denonvilliers') fascia
lrc	cardinal ligament
ll	broad ligament
lov	umbilicovesical ligament
lr	round ligament
lsrgp	sacro-recto-genito-pubic ligament
lus	uterosacral ligament
lvr	vesicorectal ligament
lvu	vesicouterine ligament

### **Peritoneal Cavities**

#### **Supramesocolic**

esr	superior expansion of the lesser sac
-----	--------------------------------------

re	lesser sac
rgs	gastrosplenic recess
rre	inferior recess of the lesser sac
rM	Morrison's recess
rps	perisplenic recess
rses	left subhepatic recess
rsp	splenopancreatic recess
rsre	superior recess of the lesser sac
rsvs	left suprahepatic recess
rvre	vestibular recess of the lesser sac
ssed	right subhepatic space
sses	left subhepatic space
ssd	right subphrenic space
sss	left subphrenic space
W	Winslow's foramen

### **Submesocolic**

cmdc	right inframesocolic cavity
cmcs	left inframesocolic cavity
csme	submesocolic cavity
dpd	right paracolic gutter
dps	left paracolic gutter

### **Pelvic**

cpsd	right parasigmoidal cavity
cpss	left parasigmoidal cavity
cp	pelvic cavity
fil	lateral inguinal fossa
fim	median inguinal fossa
rlv	laterovesical recess
rpr	pararectal recess
rrv	retrovesical recess
rur	uterorectal recess
rvr	vesicouterine recess
ssv	supravesical space

### **Abdominal Extraperitoneal Spaces**

sov	umbilicovesical space
spp	preperitoneal space
srp	suprapubic retromuscular space
ss0	supraumbilical space(umbilical canal)

**Retroperitoneal Spaces**

slc	lateroconal space
spa	anterior pararenal space
spp	posterior pararenal space
sper	perirenal space

**Pelvic Subperitoneal Spaces**

sper	perirectal
spev	perivesical
spr	prerectal
spv	prevesical
srl	laterorectal
srr	retrorectal
srv	retrovesical

**Arteries**

A	aorta
ACM	middle colic
ACMA	marginal colic
ACO	left gastric or coronarostomachic
ACS	left colic
AD	duodenal
ADF	inferior diaphragmatic
ADG	jejunal
ADR	Drummond's arcade
AE	hepatic
AEP	epiploic
AES	superior hemorrhoidal
AGB	short gastric
AGD	gastroduodenal
AGE	gastroepiploic
AI	common iliac
AIC	ileocolic
AIE	external iliac
AII	internal iliac
AMI	inferior mesenteric
AMS	superior mesenteric
APIDAI	anteroinferior pancreatoduodenal
APDAS	anterosuperior pancreatoduodenal
APDPI	posteroinferior pancreatoduodenal
APDPS	posterosuperior pancreatoduodenal
AR	renal
ARIOL	Riolan's arcade
AS	splenic
ASI	sigmoidal
TC	celiac trunk
VaRe	vasa recta

**Pelvic arteries**

AEI	inferior epigastric
AES	superior hemorrhoidal
AIC	common iliac
AIE	external iliac
AII	internal iliac
AO	obturator
AOV	umbilicovesical
ASL	lateral sacral
AUO	utero-ovarian
AVD	vesiculodeferential
AVI	inferior vesical
AVS	superior vesical

**Veins**

CI	inferior cava
TP	portal trunk
TVGC	gastrocolic venous trunk
VCM	middle colic
VCMA	marginal colic
VCO	left gastric
VCS	left colic
VEP	epiploic
VES	superior hemorrhoidal
VGB	short gastric
VGD	gastroduodenal
VGE	gastroepiploic
VIC	ileocolic
VMI	inferior mesenteric
VMS	superior mesenteric
VO	umbilical
VPCD	paracolic or right marginal
VPCS	paracolic or left marginal
VPDAI	anteroinferior pancreatoduodenal
VPDAS	anterosuperior pancreatoduodenal
VPDPI	posteroinferior pancreatoduodenal
VPDPS	posterosuperior pancreatoduodenal
VR	renal
VS	splenic
VSI	sigmoidal

**Pelvic veins**

VEI	inferior epigastric
VEM	middle hemorrhoidal
VI	common iliac
VIE	external iliac
VII	internal iliac
VSP	spermatic
VSL	lateral sacral
VUO	utero-ovarian

**Lymph Nodes**

C	celiac
CD	right colic
CE	cecal
CI	cystic
CMA	marginal colic
CME	middle colic
CS	left gastric
CSI	left colic
D	duodenal
DI	jejunoileal
EMS	superior hemorrhoidal
EP	deep hepatic
ES	superficial hepatic
GED	right gastroepiploic
GES	left gastroepiploic
IC	ileocolic
IE	external iliac
II	internal iliac
ILC	common iliac
LA	lumboaortic
MC	mesocolic
MI	inferior mesenteric
MS	superior mesenteric
O	omental
P	pyloric
PA	pancreatic
PCA	anterior paracaval
PCP	posterior paracaval
PDA	anterior pancreatoduodenal
PDP	posterior pancreatoduodenal
R	renal
S	splenic
SC	supra- and subcardial
SI	sigmoidal
SP	splenopancreatic
UO	utero-ovarian
V	vesical
W	of the Winslow's foramen

**Organs**

C	colon
CA	ascending colon
CD	descending colon
CE	cecum
CO	gallbladder
CT	transverse colon
D	duodenum
DG	jejunum
F	liver
FDD	duodenojejunal flexure
FT	transverse fissure
I	ileum
LC	caudate lobe
M	spleen
O	ovary
P	pancreas
PL	pleura
PP	papilliferous process of the caudate lobe
R	rectum
RE	kidney
S	stomach
SI	sigmoid
T	small bowel
U	uterus
UR	ureter
V	urinary bladder (or vesica)
VE	seminal vesicles