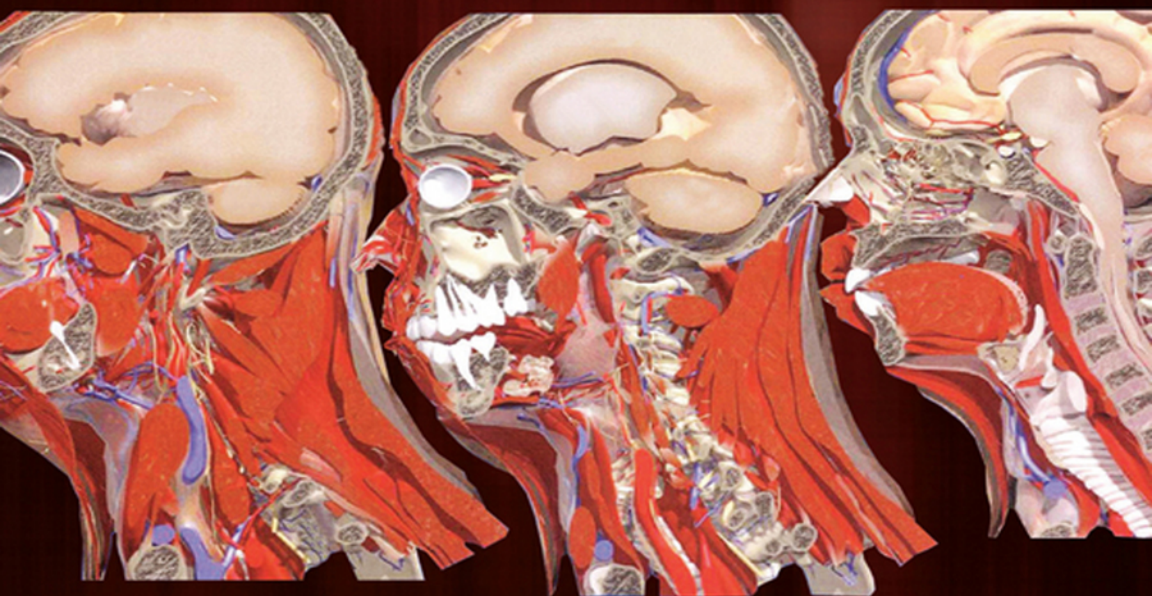


ULTRASONIC  
TOPOGRAPHICAL  
— AND —  
PATHOTOPOGRAPHICAL  
ANATOMY



A COLOR ATLAS

Z. M. SEAGAL  
O. M. SURNINA

 Scrivener  
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# Ultrasonic Topographical and Pathotopographical Anatomy

**Scrivener Publishing**

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Beverly, MA 01915-6106

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Co-published by John Wiley & Sons, Inc. Hoboken, New Jersey, and Scrivener Publishing LLC, Salem, Massachusetts.

Published simultaneously in Canada.

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Cover design by [To come]

***Library of Congress Cataloging-in-Publication Data:***

ISBN 978-1-119-22357-3

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

# Abstract

A new description of the ultrasonic topographical and pathotopographical anatomy of the head, neck, chest, anterolateral abdominal wall, abdominal organs, retroperitoneal space, male and female pelvises, and lower extremities is presented.

Specific and non-specific ultrasonic symptoms are suggested for normal and abnormal developmental variants, diffuse and local pathotopographical anatomy. The color atlas contains comparative topographical and pathotopographical data. This atlas is the first manual of its kind for students and medical specialists in different areas, including those specializing in medical sonography. The original technology was tested at clinics in patients subjected to ultrasonic monitoring. Because of early detection there were no false-positive or false-negative results. The therapy was effective; in some cases, the use of the original method of “seagalography” (optometry and pulsemotorgraphy) has made it possible to develop new methods of treatment and/or to determine the optimal doses of drugs, as well as to develop effective drug complexes for treatment of a given pathology.

The monograph is intended to be used by physicians, junior physicians, medical residents, lecturers in medicine, and medical students.





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# Preface

N. I. Pirogov, the founder of topographical anatomy, introduced the term “surgical anatomy” for the location and interaction of organs and tissues in surgical diseases. Surgical anatomy is changed during surgery as a result of the surgeon’s activity. At certain stages of operation the tissue patterns are invariable, i.e., the topographical anatomy is observed. In other areas, normal topographical anatomy is converted into pathotopographical anatomy.

Presently, the problem of atraumatic visualization of topographical and pathotopographical anatomy is fairly urgent for practical medicine for the purposes of differentiation between norm and pathology, variants of the norm, and specific and non-specific variants of pathotopography. The method of ultrasonic topographical and pathotopographical anatomy developed by the authors of this monograph provides an opportunity for solving this problem.

During the last decade we have used this method to study normal and pathological topographoanatomical structures of the human body and development anomalies. Specific features of topographical anatomy due to inflammatory processes, obstruction of tubular organs, in tissues modified as a result of dystrophy, obesity, tuberculosis, and tumor have been determined. Layer-by-layer ultrasonic topography, holotopy, and syntopy have been studied. The data obtained in this work were compared with the conventional topographical data, as well as the results obtained by functional methods of optometry and pulsomotorgraphy developed by Prof. Z. M. Seagal.

It is important to note that a living human body was tested both in the norm and pathology. This provides more reliable diagnosis,

development of sparing operations, and atraumatic and effective control of therapy.

Further development of ultrasonic topography and pathotopography should be focused on typical anatomy, i.e., the study of distribution of tissues and systems within the human body, as well as location of organs and parts of the body. It was noted that people with a certain constitution and of a definite age had an extreme type of structure and location of organs. The importance of ultrasonic scanning for the typical anatomy is that it provides differentiation between the age norm and the pathology.

For the first time ultrasonic topographical anatomy was used for diagnosis in studies of this kind, in full accordance with the physician's motto "to treat the patient rather than the disease".

Ultrasonic topographical anatomy contributes to differentiating congenital defects that could necessitate urgent treatment.

In addition to development of new topographical and pathotopographical human anatomy, we acquired the experience in teaching this discipline to physicians of various specialties. It was taught to interns, junior physicians, medical residents, and medical students, as well as specialists in surgery, traumatology, neurosurgery, oncology, urology, obstetrics and gynecology, dental surgery, anesthesiology, and other medical specialists concerned with different topographical and anatomical structures (neurologists, dentists, ophthalmologists, pathologists, forensic medical examiners, etc.).

This color atlas of ultrasonic topographical and pathotopographical anatomy is an original scientific manual intended to be used by physicians of different specialties in their everyday work.

## About the Authors

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# Topography and Pathotopography of the Head

The chapter on the ultrasonic topography and pathotopographical anatomy of the head includes layer-by-layer topography of the visceral and cerebral craniums with the cross-sectional imaging of the head.

Ultrasonic images of external and internal bone lamellae, vessels of the subcutaneous layer, skin, and subcutaneous fat, depressed compression and linear fractures are demonstrated. Ultrasonic images of the medial cerebral artery, infundibulum, posterior communicating artery, pons cerebelli, medulla oblongata, anterior inferior cerebellar artery, basilar artery, anterior cerebral artery, posterior cerebral artery, and olfactory tract are verified based on the topographical anatomy of the basilar region of the cranium.

The deep facial area contains the internal wing muscle, mandibulum, and submandibular salivary gland; the oral cavity contains the tongue, peripharyngeal space, and posterior veil of the soft palate, as well as the