
Breast Imaging Review

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A Quick Guide to Essential Diagnoses

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Dedication

To my parents, Ashok and Jyoti Shah, who I owe everything I am to them. I am guided by their strong principles of life and work ethic that they instilled in me.

To my sister, Binita Shah Ashar, for her sound advice and constant encouragement.

To my wife, Dharmishtha Shah, for her endless support and love.

To my two sons, Aren and Deven, who make life all worthwhile.

Biren A. Shah

To my mother and father, Jacqueline and William, for their guidance, teaching, and unconditional love.

To my brother, Bill, for his encouragement, friendship, and innate ability to always make me laugh.

To my grandparents, Irene and William Fundaro, for all of the sacrifices they made to provide me with a college education.

To my godfather, Thomas Capraro, and my grandma, Alyce Jarvis, for never giving up once they were diagnosed. They remind me daily to fight for my patients.

Ryan, my love and best friend, words cannot express my gratitude. Thank you for committing to our journey with an open heart. I would not be who I am today without your love and constant unwavering support.

Asher Thomas and Arden Joy, my sunshine and butterfly, you have inspired me to put my best efforts forward with this project. My hope is to pave the way for you, so that your lives are full of opportunities and rich experiences. You are the loves of my life, and every day I am so grateful that you are my children.

Gina M. Fundaro

To my parents, Vasu and Saranya, for their guidance and unconditional love and support.

To my sister, Amulya, for always being there for me.

To my children, Milind and Ariana, for the joy and laughter they have brought into all our lives.

To my husband, Rajesh, for his love and tireless belief in me. I wouldn't be here without him.

Sabala Mandava

Foreword

Over the years many residents have asked me for a concise review book for breast imaging as they study for the boards. They wanted one that would give them examples of the typical findings seen in mammography, breast ultrasound, and more recently, breast MRI. They wanted a book that would also provide examples of how to briefly describe the findings of the entity being viewed using correct BI-RADS terminology as would be expected by the examiners they encounter during oral board exams. This book will hopefully answer these needs.

This atlas of classic cases does more than giving examples of cases demonstrating many of the typical presentations of breast disease as seen on mammography and ultrasound. The addition of references to facilitate more reading on any topic the resident desires is an important part of this book. Easy access to the references may lead at least a few of those studying for boards to read a bit more about breast imaging.

The cases that include MRIs and the descriptions of the findings and the examples of the kinetic curves demonstrate pathognomic findings of breast disease on MRI and are a good window into the potential role of MRI in the detection and evaluation of breast cancer. This review book does not include molecular imaging, since these imaging modalities are not yet proven to be helpful in the evaluation of breast disease. Perhaps, in the future, if these techniques are shown to be as useful as preliminary results suggest, examples of these breast imaging techniques can be added.

The brief summary of the image-guided procedures is a good review for the resident taking the boards. It will provide them with a short description of how to perform biopsies and other breast procedures using each of the 3 methods of guidance. They are likely to be asked how to perform biopsies at least once during their exams. For those who do practice breast imaging, this section will be helpful as a reminder of the steps involved as they begin to perform these procedures on their own.

The above leads to what I feel will be another use for this review book which will be in the reading room for those who are just starting to read mammography on their own. Not only will it provide a quick way to reinforce the most typical breast abnormalities, but again the references at the end of each case will provide quick access to resources to help the beginning mammographer reinforce her/his decisions. I think many of the residents who purchase this book to help review for boards will also find it useful as they begin to practice.

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Preface

Breast imaging has evolved over the years into a multimodality specialty encompassing mammography, ultrasound, MRI, and PET. It is made up of a unique combination of image interpretation, interventions, and patient interactions. Many times we have heard our residents comment “It’s so different from our other rotations.” We are privileged to be surrounded by our residents and fellows who have a keen intellect and a joy for learning. Their innumerable questions and thirst for knowledge are in part the inspiration for this book.

Although written primarily as a review for senior residents preparing for oral boards, we hope it will be a useful tool for all residents and fellows as well as practicing radiologists out in the “real world.” We have tried to make the format of the book a simple one. The book is divided into sections and follows a case-based approach. The images and information for each case are on facing pages so as to make it easy for the reader to move back and forth between the two. We have purposely arranged the cases in random order to more accurately reflect the oral boards format. Wherever possible we have tried to include images in multiple modalities for each diagnosis.

The section on interventional procedures gives a step by step approach to the common breast interventions.

The high yield facts at the end of the book are just that: an organized review of important points in breast imaging that can serve as a quick reference.

Our goal was to write a review book that would be useful for radiologists in all stages of their careers: one that would be comprehensive in content in an easy to read format and serve as a quick reference. We hope that we have managed to achieve this goal.

Anyone who stops learning is old, whether at twenty or eighty. Anyone who keeps learning stays young.

Henry Ford

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Gina M. Fundaro
Sabala Mandava

Acknowledgments

It all started at the tail end of a busy clinic day in breast imaging. Biren mentioned to Gina an idea that he had been mulling over for a while, to write a review book in breast imaging geared toward the oral boards. After hearing the idea, Gina enthusiastically became a part of the project. A few days later, Biren explained the concept to Sabala who also hopped on board the review book bandwagon. And so a book was born.

From then on, it has been a whirlwind of research, writing, deadlines, emails (hundreds of emails), early mornings, and late nights. We were all at once elated, frustrated, overwhelmed, and subdued. As this is a freshman project for all of us, we have learned many things by trial and error. We also found hidden talents in each other, which emerged along the way:

Biren's resourcefulness and quick solutions to road blocks are belied by his calm and quiet exterior.

Gina, with her attention to detail and task-oriented lists, helped us meet every deadline.

Sabala's natural loquaciousness translated into a flair for sentence structure and layout.

This book would not have been possible without the help of many people:

Dr. Manuel L. Brown, MD, our chairman, who has given us his unconditional support from the beginning.

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Our residents and fellows, who keep our minds sharp and our work environment fun.

To all of you, our heartfelt thanks. We could not have accomplished this without you.

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