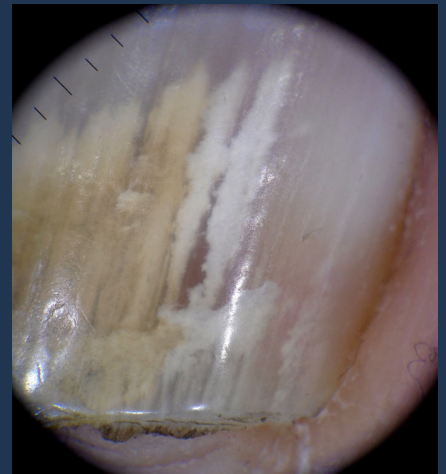


Nail Disorders

A Comprehensive Approach

EDITED BY

Archana Singal
Shekhar Neema
Piyush Kumar



Foreword by Robert Baran

Nail Disorders



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Nail Disorders

A Comprehensive Approach

Edited by
Archana Singal
Shekhar Neema
Piyush Kumar



CRC Press

Taylor & Francis Group
Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **informa** business

CRC Press
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

© 2019 by Taylor & Francis Group, LLC
CRC Press is an imprint of Taylor & Francis Group, an Informa business

No claim to original U.S. Government works

Printed on acid-free paper

International Standard Book Number-13: 978-0-8153-7834-1 (Hardback)

This book contains information obtained from authentic and highly regarded sources. Reasonable efforts have been made to publish reliable data and information, but the author and publisher cannot assume responsibility for the validity of all materials or the consequences of their use. The authors and publishers have attempted to trace the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission to publish in this form has not been obtained. If any copyright material has not been acknowledged please write and let us know so we may rectify in any future reprint.

Except as permitted under U.S. Copyright Law, no part of this book may be reprinted, reproduced, transmitted, or utilized in any form by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying, microfilming, and recording, or in any information storage or retrieval system, without written permission from the publishers.

For permission to photocopy or use material electronically from this work, please access www.copyright.com (<http://www.copyright.com/>) or contact the Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400. CCC is a not-for-profit organization that provides licenses and registration for a variety of users. For organizations that have been granted a photocopy license by the CCC, a separate system of payment has been arranged.

Trademark Notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

Library of Congress Cataloging-in-Publication Data

Names: Singal, Archana, editor. | Neema, Shekhar, editor. | Kumar, Piyush, 1982- editor.
Title: Nail disorders : a comprehensive approach / [edited by] Archana Singal, Shekhar Neema, Piyush Kumar.
Description: New York, NY : CRC Press/Taylor & Francis Group, 2019. | Includes bibliographical references and index.
Identifiers: LCCN 2018055489 | ISBN 9780815378341 (hardback : alk. paper) | ISBN 9781351139724 (ebook)
Subjects: | MESH: Nail Diseases--diagnosis | Nail Diseases--therapy
Classification: LCC RL165 | NLM WR 475 | DDC 616.5/47--dc23
LC record available at <https://lccn.loc.gov/2018055489>

Visit the Taylor & Francis Web site at
<http://www.taylorandfrancis.com>
and the CRC Press Web site at
<http://www.crcpress.com>

Dedication

To my parents, my husband Dinesh and children Suvina, Ramit & Arshia for their unconditional and constant support, love and encouragement.

Archana Singal

My Mother for being a constant source of inspiration and support.

Shekhar Neema

My Family who generously parted with their time to allow me the privilege of working for this book.

Piyush Kumar



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Contents

Foreword	xi
Preface	xiii
Acknowledgments	xv
Editors	xvii
Contributors	xix
PART 1 HISTORY AND NORMAL NAIL	1
<hr/>	
1 History of nail diseases <i>Amiya Kumar Mukhopadhyay</i>	3
2 Nail anatomy and physiology <i>Pooja Arora Mrig and Neha Meena</i>	11
3 Nail unit signs <i>Niharika Ranjan Lal, Piyush Kumar, and Rizwana Barkat</i>	21
4 An approach to nail examination <i>Shikha Bansal and Neha Kumar</i>	49
PART 2 DIAGNOSTICS	59
<hr/>	
5 Laboratory investigations of nail diseases <i>Shukla Das and Richa Tigga</i>	61
6 Imaging in nail diseases <i>Kalpana Bhatt, Swagata Arvind Tambe, Hemangi R. Jerajani, Deepak Bhatt, and Chitra S. Nayak</i>	73
7 Onychoscopy and nail fold capillaroscopy <i>Deepak Jakhar and Archana Singal</i>	99
8 Basics of onychopathology <i>Eckart Haneke</i>	113
9 Onychopathology of common nail diseases <i>Sonal Sharma and Pooja Sharma</i>	135
PART 3 NAIL UNIT ABNORMALITIES	145
<hr/>	
10 Nail plate abnormalities <i>Balachandra S. Ankad and Savitha L. Beergouder</i>	147
11 Chromonychia <i>Michela Starace, Aurora Alessandrini, and Bianca Maria Piraccini</i>	165
12 Ingrown nail <i>Azzam Alkhalifah and Bertrand Richert</i>	177

PART 4 INFLAMMATORY NAIL DISEASES	191
13 Nail psoriasis <i>Chander Grover and Subuhi Kaul</i>	193
14 Nail lichen planus <i>Iffat Hassan, Mohammad Abid Keen, and Yasmeen Jabeen Bhat</i>	213
15 Trachyonychia <i>Archana Singal and M. N. Kayarkatte</i>	221
PART 5 INFECTIVE NAIL DISEASES	229
16 Dermatophytic onychomycosis <i>Malcolm Pinto and Manjunath M. Shenoy</i>	231
17 Non-dermatophytic onychomycosis <i>Avner Shemer</i>	247
18 Infections and infestations of nail unit <i>Vineet Relhan and Vikrant Choubey</i>	257
PART 6 NAIL IN DERMATOLOGICAL AND SYSTEMIC DISEASES; OCCUPATION AND DRUG INDUCED NAIL CHANGES	271
19 Nail in dermatological diseases <i>Piyush Kumar and Niharika Ranjan Lal</i>	273
20 Nails in systemic disease <i>Bela J. Shah</i>	291
21 Occupational nail diseases <i>Deepika Pandhi and Vandana Kataria</i>	305
22 Chronic paronychia <i>Santoshdev P. Rathod and Pooja Agarwal</i>	317
23 Nail changes due to systemic drugs <i>Vijay Zawar and Manoj Pawar</i>	323
PART 7 NAIL IN SPECIAL POPULATIONS	331
24 Nail in children: Congenital and hereditary diseases <i>Taru Garg and Sarita Sanke</i>	333
25 Nail in elderly population <i>Savitha AS and Shashikumar BM</i>	347
PART 8 NAIL UNIT TUMORS	357
26 Benign tumors <i>Eckart Haneke</i>	359
27 Malignant tumors <i>Eckart Haneke</i>	399
PART 9 PSYCHOCUTANEOUS NAIL DISORDERS	429
28 Nail tic disorders <i>Ishmeet Kaur and Archana Singal</i>	431

PART 10	SURGICAL MANAGEMENT OF NAIL DISEASES	441
29	Basics of nail surgery <i>Shilpa Kapanigowda and Biju Vasudevan</i>	443
30	Anesthesia of the nail unit <i>Shekhar Neema and Dipali Rathod</i>	451
31	Biopsy of the nail unit <i>Sushil Tahiliani and Harsh Tahiliani</i>	459
32	Injection therapy for nail disorders <i>B.B. Mahajan, Jyotisterna Mittal, Khayati Singla, and Parul Chojer</i>	467
33	Surgery of benign nail tumors <i>Eckart Haneke</i>	477
PART 11	NAIL COSMETICS	485
34	Nail care and nail cosmetics <i>Soni Nanda and Sonal Bansal</i>	487
35	The science of nail polish, nail polish remover, and nail moisturizers <i>Somodyuti Chandra and Anupam Das</i>	497
PART 12	MISCELLANEOUS CONDITIONS	503
36	Nail degloving syndrome <i>Robert Baran</i>	505
37	Miscellaneous nail conditions <i>Sunil K. Kothiwala and Piyush Kumar</i>	509
38	Photography of the nail unit <i>Sanjeev Gupta and Kartikay Aggarwal</i>	517
Index		527



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Foreword

Rarely has a book such as “*Nail Disorders: A Comprehensive Approach*” deserved this title. Three eminent editors, Dr. Archana Singal, Dr. Shekhar Neema, and Dr. Piyush Kumar have not only written excellent chapters but have also attracted the most universal recognized onychologists in order to produce this exceptional book—a very original contribution to a rarely discussed topic. I particularly appreciate the diagnostic chapters with lab investigations, imaging in nail diseases, onychoscopy, and the compelling work on histopathology produced by one of the most talented specialists in this field. I feel truly privileged to be able to congratulate the editors and the individual contributors.

Robert Baran
Nail Disease Centre
Cannes, France



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Preface

The study of nail disorders (onychology) was in its nascent stage in India, but in less than a decade, we have witnessed a tremendous and rapidly growing interest amongst dermatologists, pathologists, and plastic surgeons alike. Nail disorders are complex and intriguing owing to the anatomically small nail unit that limits the expression of various diseases of diverse etiology. Due to their evident visibility, nails score high on aesthetic and cosmetic value. And on closer examination, the nails may act as a window into the body. Of late, there has been a steady increase in the number of patients seeking dermatological consult for nail disorders. Thus, nail disorders and their management form a significant share of a dermatologists' practice. But nails do not get due importance during a postgraduate curriculum, leaving a lot to be learned later in practice.

The aim of this book is to provide comprehensive information on medical as well the surgical aspect of nail diseases. A wide and exhaustive range of nail disorders including infective, inflammatory, traumatic, drug-induced changes; benign and malignant tumors; nails in different age groups; and nails in dermatological and systemic diseases have been covered. Dedicated chapters on newer diagnostic tools beyond histopathology, onychoscopy, and nail imaging have been included. To keep pace with the present trend and interest of the readers in cosmetology, a special section on nail cosmetics and cosmetic procedures has been

included. In addition, a simple stepwise approach to diagnosis, based on the most important clinical features, examination, laboratory investigations, and treatment, is presented.

The chapters have been contributed by authors from all over the globe who are the experts in the field of onychology. Their writing comes from years of practical and academic experience in the field. Since "a picture is worth a thousand words," we have effectively conveyed the essence of this phrase by including a liberal number of quality photographs that will help our valuable readers to identify common and uncommon nail disorders. The information has been presented in a very reader friendly manner with the generous use of tabulations, graphics, and flow charts.

It has been a wholehearted and earnest endeavor on our part to present updated information in a concise manner. We are open to appreciations, suggestions, and criticism from our esteemed readers, so that we can eliminate the errors in the subsequent editions. We hope that this book will generate enough curiosity and interest in not only the dermatological but the medical fraternity and will make it to the list of "must have" manuals for all.

Archana Singal
Shekhar Neema
Piyush Kumar



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Acknowledgments

We express our gratitude to the authors for working tirelessly on this project during the last year and completing the assignment on time.

We are grateful to our teachers for showing us the path.

We thank all our patients, who kept faith in us and taught us in the process.

We thank all our students, past and present: we learn more when we teach.

We are thankful to the publishers, and especially Ms. Shivangi, Ms. Mouli, and Ms. Raina, who worked with us during the project.



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Editors

Archana Singal is Director professor in the department of dermatology and STI, at University College of Medical Sciences, New Delhi, India. She has 30 years' experience in clinical dermatology. She is a fellow of the National Academy of Medical Sciences (FAMS). She did her clinical and research fellowship at the University of Sydney, Australia (2001–2002). She has a special interest in the diagnosis and management of nail diseases. She is the founder president of the Nail Society of India (NSI). Her other areas of interest include tropical dermatology and genodermatoses. She has to her credit more than 180 scientific publications in indexed journals and has authored nearly 30 chapters pertaining to dermatology in various textbooks. She is editor of *Comprehensive Approach to Infections in Dermatology* and *Atlas of Infections in Dermatology*. She has been awarded the Indian Association of Dermatologist, Venereologist and Leprologist (IADVL) Systopic Oration, Sardarilal Memorial Award for academic excellence and the IADVL teacher par excellence award. She was the organizing president for the second ONYCHOCON conference (Annual National conference of NSI in 2013), third International Summit for Nail Diseases (ISND) and the fourth ONYCHOCON (2015). She was the scientific chairperson for the Dermatology and Allied Specialty Summit (DAAS) during 2014–2018. Dr. Singal also served as president of IADVL, Delhi State Branch, in 2009. She is a regular invited faculty to various national and international dermatology congresses.

Shekhar Neema is an alumnus of the Armed Forces Medical College, Pune, India. He excelled in MBBS with 10 distinctions to his name and was awarded the President Gold Medal for the best academic record in 2006. He was awarded gold medal from Maharashtra University of Health Sciences

(MUHS) in MD (Dermatology). He successfully cleared the European Board of Dermatology and Venereology examination. He has done an International Society of Dermatology (ISD) fellowship at Ludwig Maximilian University, Munich. He has more than 30 publications in indexed journals and has authored many chapters in various dermatology textbooks. He is the editor of the books *Dermoscopy in Darker Skin* and *Handbook of Biologics and Biosimilars in Dermatology*. He has been involved as assistant editor of various books, namely the *IADVL Atlas of Dermatology*, *Clinical Correlations in Dermatology*, and Association of Cutaneous Surgeons of India (ACSI) textbook of procedural dermatology. His areas of special interest are immunodermatology, dermatotherapeutics, dermatosurgery, dermoscopy, and nail diseases. He is presently working as an associate professor at the Armed Forces Medical College, Pune.

Piyush Kumar graduated from the University of Calcutta with a gold medal. He finished his post-graduate studies in Dermatology at the Medical College and Hospital, Kolkata, in 2011, and was judged the best outgoing university medical graduate in Dermatology. He received various scholarships during and after his post-graduation studies to attend and present papers at international conferences. His interest in academics led him to pursue teaching in a medical college as a career and he is currently working as an associate professor. He has published more than 100 papers in indexed national and international journals and works as a reviewer for various national and international specialty journals. He has contributed many chapters to various books and is currently editing three books. His areas of interest are clinical dermatology, dermatopathology, nail disorders, and genital dermatoses.



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Contributors

Mohammad Abid Keen MD

Department of Dermatology and STD
Government Medical College
Srinagar, India

Pooja Agarwal MD

Department of Dermatology
Smt. NHL Municipal Medical College
SCL Hospital
Ahmedabad, India

Kartikay Aggarwal MBBS

Dermatology
Maharishi Markandeshwar Institute of Medical Sciences
and Research
Ambala, India

Aurora Alessandrini

Dermatology
Department of Experimental, Diagnostic and Specialty
Medicine
University of Bologna
Bologna, Italy

Azzam Alkhalifah MD

Dermatology Department
Unaizah College of Medicine
Qassim University
Buraydah, Saudi Arabia

Balachandra S. Ankad MD

Department of Dermatology
S. Nijalingappa Medical College
Bagalkot, India

Shikha Bansal MD, DNB, MNAMS

Department of Dermatology
Vardhman Mahavir Medical College (VMMC) and
Safdarjung Hospital
New Delhi, India

Sonal Bansal MD

Consultant Dermatologist
DermaSpace Skin Clinic
and

Fortis Memorial Research Institute
Gurgaon, India

Robert Baran MD

Department of Dermatology
Nail Disease Center

and

Consultant Dermatologist
Gustave Roussy Cancer Institute
Cannes, France

Rizwana Barkat MD

Consultant Dermatologist
Gaya, India

Savitha L. Beergouder DDVL

Department of Dermatology
S. Nijalingappa Medical College
Bagalkot, India

Yasmeen Jabeen Bhat MD

Department of Dermatology, STD and Leprosy
Government Medical College
Srinagar, India

Deepak Bhatt DMRD, MD

Consultant Radiologist
UBM Institute and Dr. Bhatt Sonography Center
and

Honorary Consultant Radiologist
JJ Group of Hospitals
Mumbai, India

Kalpana Bhatt DMRE, MD (Radiology)

Consultant Radiologist
UBM Institute and Dr. Bhatt Sonography Centre
and

Honorary Consultant Radiologist
Wadia Hospital
Mumbai, India

Somodyuti Chandra MD, DNB, SCE (UK)

Junior Consultant
The Venkat Centre for Skin and Plastic Surgery
Bangalore, India

Parul Chojer

Department of Dermatology
Government Medical College
Amritsar, India

Vikrant Choubey MD

Department of Dermatology
Maulana Azad Medical College and LNJP Hospital
New Delhi, India

Anupam Das MD

Dermatology
KPC Medical College and Hospital
Kolkata, India

Shukla Das MD, DNB, MNAMS

Department of Microbiology
University College of Medical Sciences and
GTB Hospital
New Delhi, India

Taru Garg MD

Dermatology and Venereology
Lady Hardinge Medical College and Associated
Hospitals
New Delhi, India

Chander Grover MD, DNB, MNAMS

Department of Dermatology and STD
University College of Medical Sciences and
GTB Hospital
New Delhi, India

Sanjeev Gupta MD, DNB

Dermatology
Maharishi Markandeshwar Institute of Medical Sciences
and Research
Ambala, India

Eckart Haneke MD, PhD

Department of Dermatology
Inselspital University of Bern
Bern, Switzerland

and

Dermatology Practice Dermaticum
Freiburg, Germany

Iffat Hassan MD

Department of Dermatology, STD and Leprosy
Government Medical College
Srinagar, India

Deepak Jakhar MD

Department of Dermatology
Hindu Rao Hospital
New Delhi, India

Hemangi R. Jerajani MD, DVD, FIAD

Department of Dermatology
MGM Medical College and Hospital
Navi Mumbai, India

Shilpa Kapanigowda MD

Department of Dermatology
Bangalore Medical College
Bangalore, India

Vandana Kataria MD

Department of Dermatology
Maulana Azad Medical College and LNJP Hospital
New Delhi, India

Subuhi Kaul MD

Department of Dermatology
All India Institute of Medical Sciences
New Delhi, India

Ishmeet Kaur MD

Department of Dermatology
ESI Medical College and Hospital
New Delhi, India

M. N. Kayarkatte MD

Department of Dermatology
University College of Medical Sciences and
GTB Hospital
New Delhi, India

Sunil K. Kothiwala

Consultant Dermatologist
SkinEva Clinic
Jaipur, India

Neha Kumar MD

Department of Dermatology
VMMC and Safdarjung Hospital
New Delhi, India

Piyush Kumar MD

Department of Dermatology
Katihar Medical College and Hospital
Katihar, India

B. B. Mahajan MD

Department of Dermatology
Government Medical College
Amritsar, India

Neha Meena MD

Dermatologist (DMO)
Central Hospital, North Western Railway
Jaipur, India

Jyotisterna Mittal MBBS, MD

Consultant Dermatologist
Ludhiana, India

Pooja Arora Mrig MD, DNB, MNAMS

Department of Dermatology
Dr. Ram Manohar Lohia Hospital and PGIMER
New Delhi, India

**Amiya Kumar Mukhopadhyay MD, PhD, DNB (Derm),
DNB (Derm and Vener), MNAMS**

Consultant Dermatologist
Kolkata, India

Soni Nanda MD

Consultant Dermatologist
Shine and Smile Skin Clinic
New Delhi, India

Chitra S. Nayak MD, DDV, DHA, AFIH

Department of Dermatology
Topiwala National Medical College and
BYL Nair Hospital
Mumbai, India

Shekhar Neema MD, FEBDV

Department of Dermatology
Armed Forces Medical College
Pune, India

Deepika Pandhi

Department of Dermatology and STD
University College of Medical Sciences and
GTB Hospital
New Delhi, India

Manoj Pawar MD

Department of Dermatology
Dr. V.P. Medical College, Hospital and Research Centre
Nashik, India

Malcolm Pinto MD

Department of Dermatology
Yenepoya Medical College
Mangalore, India

Bianca Maria Piraccini MD, PhD

Dermatology
Department of Experimental, Diagnostic and Specialty
Medicine
University of Bologna
Bologna, Italy

Niharika Ranjan Lal MD

Department of Dermatology
ESI PGIMS and ESI Medical College
Kolkata, India

Dipali Rathod MBBS, DDV

Consultant Dermatologist
Mumbai, India

Santoshdev P. Rathod MD

Department of Dermatology
Smt. NHL Municipal Medical College and
V. S. Hospital
Ahmedabad, India

Vineet Relhan MD

Department of Dermatology
Maulana Azad Medical College & LNJP Hospital
New Delhi, India

Bertrand Richert MD, PhD

Department of Dermatology
Brugmann, Saint-Pierre and Queen Fabiola Children
University Hospitals
Université Libre de Bruxelles
Brussels, Belgium

Sarita Sanke MD, DNB

Department of Dermatology and Venereology
Lady Hardinge Medical College and Associated
Hospitals
New Delhi, India

A. S. Savitha MD, DNB, FRGUHS

Department of Dermatology
Sapthagiri Medical College and Research Institute
Bangalore, India

Bela J. Shah MD

Department of Dermatology, Venereology and Leprology
B.J. Medical College and Civil Hospital
Ahmedabad, India

Pooja Sharma MD

Department of Pathology
All India Institute of Medical Sciences
New Delhi, India

Sonal Sharma MD

Pathology
University College of Medical Sciences and GTB Hospital
New Delhi, India

B. M. Shashikumar MD, FIADVL

Department of Dermatology
Mandya Institute of Medical Sciences
Mandya, India

Avner Shemer MD

Dermatology Department
Sackler School of Medicine
Tel-Aviv University
Tel-Aviv, Israel

Manjunath M. Shenoy MD, DNB

Department of Dermatology
Yenepoya Medical College
Yenepoya University
Mangalore, India

Archana Singal MD, FAMS

Department of Dermatology and STD
University College of Medical Sciences & GTB Hospital
New Delhi, India

Khayati Singla MD

Department of Dermatology
Government Medical College
Patiala, India

Michela Starace MD

Dermatology
Department of Experimental, Diagnostic and Specialty
Medicine
University of Bologna
Bologna, Italy

Harsh Tahiliani MD

Visiting Consultant
Dermatology
Bhartiya Arogya Nidhi Hospital
Mumbai, India

Sushil Tahiliani MD, DV&D

Visiting Consultant
Dermatology
Hinduja Hospital
Hinduja Healthcare Surgical and Asian Heart Institute
Mumbai, India

Swagata Arvind Tambe MD, DNB, FCPS, DDV

Consultant Dermatologist
Innovation Skin Clinic & Laser Center
Mumbai, India

Richa Tigga MBBS

Department of Microbiology
University College of Medical Sciences and
GTB Hospital
New Delhi, India

Biju Vasudevan MD, FRGUHS

Department of Dermatology
Base Hospital
Lucknow, India

Vijay Zavar

Department of Dermatology
Dr. V.P. Medical College, Hospital and Research Centre
Nashik, India

History and Normal Nail

1	History of nail diseases	3
	<i>Amiya Kumar Mukhopadhyay</i>	
2	Nail anatomy and physiology	11
	<i>Pooja Arora Mrig and Neha Meena</i>	
3	Nail unit signs	21
	<i>Niharika Ranjan Lal, Piyush Kumar, and Rizwana Barkat</i>	
4	An approach to nail examination	49
	<i>Shikha Bansal and Neha Kumar</i>	



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>