



Overview

HAND SURGERY IN VIETNAM: DEVELOPMENT, CHALLENGES AND FUTURE DIRECTIONS

Nguyen Van Thai^{1,*}, Le Van Doan², Le Nghi Thanh Nhan³, Nguyen Duong Phi⁴

1. Pham Ngoc Thach University of Medicine, Ho Chi Minh City, Vietnam.

2. Military Central Hospital 108, Hanoi, Vietnam.

3. Hue University of Medicine and Pharmacy - Hue University, Hue City, Vietnam.

4. Children's Hospital of Ho Chi Minh City, Ho Chi Minh City, Vietnam.

Corresponding author: Assoc. Prof. Dr. Nguyen Van Thai, ✉ thainguyenvan54@yahoo.com

ABSTRACT: Hand surgery in Vietnam has evolved significantly, especially in cities like Ho Chi Minh City, Hanoi and Hue. Despite advancements, there remain challenges, including the lack of a unified national hand surgery society. This article highlights the contributions of key figures, advances and the future of the discipline in the country.

Key words: hand surgery; Viet Nam; microsurgery; development

1. INTRODUCTION

Hand surgery in Vietnam has developed considerably, particularly in cities like Ho Chi Minh City, Hanoi, and Hue. This field primarily focuses on treating trauma, congenital anomalies, and hand pathologies with the support



Figure 1. Professor Nguyen Van Nhan

of microsurgical and reconstructive techniques. Despite many advances, Vietnam still lacks a unified national hand surgery association. This article highlights the development of hand surgery in

Vietnam, the contributions of key figures, and the future of this field in the country.

2. PIONEERS IN HAND SURGERY IN VIETNAM

The key figures in the development of hand surgery in Vietnam are Professor Nguyen Van Nhan (Figure 1. Professor Nguyen Van Nhan) in the North, Associate Professor Vo Thanh Phung and Dr. Bui Van Duc (Figure 2. Associate Professor Vo Thanh Phung (Left) and Dr. Bui Van Duc (Right)) in the South, and Specialist Level II Dr. Pham Dang Nhat in Central Vietnam (Figure 3).

Professor Nguyen Van Nhan, former head of the Department of Trauma and Orthopedics at 108 Central Military Hospital from 1960 to 1970, was a pioneer in the field of medical research and application in Vietnam. He established the first bone bank in Vietnam and manufactured many orthopedic instruments, particularly external fixation devices used to treat wounds and open fractures caused by firearms. In the 1960s, he conducted many important studies on hand surgery, including techniques for long finger pollicization, finger lengthening, bone grafting, skin flap creation, and tendon transfers for patients with nerve paralysis. By 1978, he had successfully performed 55 cases of long finger pollicization for patients with thumb amputation. Professor Nhan's contributions laid the foundation for the development of modern orthopedic surgery and hand surgery in Vietnam.



Figure 2. Associate Professor Vo Thanh Phung (Left) and Dr. Bui Van Duc (Right)

Associate Professor Vo Thanh Phung, former Director of Ho Chi Minh City Trauma and Orthopedic Hospital, was a pioneer in the field of hand surgery in Vietnam and played an important role in establishing the Ho Chi Minh City Hand Surgery Association in 2000, the first association specialized in this field in Vietnam. Under his assistance, the association organized many scientific conferences and specialized training courses, helping to improve the professional skills of domestic hand surgeons through knowledge and technique exchange with international experts. Professor Phung was also a dedicated educator who trained and inspired many generations of young doctors, making important contributions to the development and modernization of hand surgery in Vietnam.

Dr. Bui Van Duc is one of the leading experts in the field of upper limb and hand surgery in Ho Chi Minh City, with many important contributions in developing treatment and hand reconstruction techniques. As a lecturer in the Department of Trauma and Orthopedics at Ho Chi Minh City University of Medicine and Pharmacy, before 1975, he was assigned by Professor Hoang Tien Bao to specialize in upper limb and hand surgery. He introduced advanced surgical techniques in treating hand trauma and deformities, particularly in handling complex cases such as limb avulsion and finger reconstruction, contributing to improving



Figure 3. Specialist Level II Dr. Pham Dang Nhat

treatment quality in this region. With extensive knowledge and rich experience, Dr. Bui Van Duc participated in teaching and training many generations of young doctors in Ho Chi Minh City, helping to improve professional skills and capacity of the local medical team in the field of upper limb and hand surgery. Additionally, he is the author of many specialized books on orthopedics and hand surgery, imparting valuable knowledge and experience to doctors and medical students, making important contributions to building a solid foundation for the development of hand surgery in Ho Chi Minh City.

In the development process of hand surgery in Vietnam, particularly in the Central region, the great contribution of Specialist Level II Dr. Pham Dang Nhat cannot be overlooked. With over 40 years of dedication in the field, Dr. Nhat has built and developed the specialty of hand surgery and plastic surgery at Hue Central Hospital. Under his leadership, generations of doctors have been systematically trained, developing advanced techniques in reconstructive surgery and microsurgery. Dr. Pham Dang Nhat has contributed to improving treatment quality not only for patients in Hue but also for the entire Central region and neighboring provinces. Through international cooperation and application of advanced microsurgical techniques, he has helped many patients restore hand function after severe trauma and treat congenital anomalies. His dedication extends beyond surgical techniques to imparting knowledge and experience to younger generations of doctors, helping them improve their skills and continue developing this field. To this day, he remains a symbol of dedication and innovation in hand surgery in Vietnam.

Hand surgery in Vietnam has made remarkable progress with the support of microsurgical techniques. This technique has brought many promising results, particularly in replanting severed limbs and finger reconstruction. In the North, Professor Nguyen Huy Phan was the pioneer who introduced microsurgical techniques to Vietnam. His student, Professor Nguyen Viet Tien, has strongly developed the field of microsurgery at 108 Central Military Hospital, where thousands of hand surgeries are performed annually, including brachial plexus injury surgeries and finger reconstruction using

toe transfer techniques. In the South, Specialist Level II Dr. Vo Van Chau was the pioneer in this technique. He was the first to perform successful finger replantation surgeries in Southern Vietnam. Dr. Vo Van Chau's contributions were not limited to developing microsurgical techniques but also in training many generations of young doctors. Microsurgical techniques have helped advance hand surgery further.

3. DEVELOPMENT OF HAND SURGERY IN MAJOR CITIES

The development of hand surgery in Vietnam has been shaped by the dedication of highly skilled surgeons and the establishment of specialized centers throughout the country.

Ho Chi Minh City, located in Southern Vietnam, is the country's largest city in terms of population and urbanization level. This city is also an important economic, political, cultural, and educational center of Vietnam. Along with economic development, many companies, factories, and industries have emerged, attracting a large workforce. Therefore, the city's immigrant population is constantly increasing. However, one of the consequences of this rapid development is the increasing number of patients with hand trauma and injuries due to occupational accidents, daily activities, and traffic accidents. The need to learn and share experience in diagnosing and treating hand surgery has become an urgent requirement, prompting the Orthopedic field in Ho Chi Minh City to establish an organization where hand surgeons can learn and exchange experiences related to diagnosing and treating hand trauma and pathologies. Under the direction of Associate Professor Vo Thanh Phung, who was then Director of Ho Chi Minh City Trauma and Orthopedic Hospital, orthopedic doctors in the city advocated for establishing the Hand Surgery Association (Figure 4. Logo of Ho Chi Minh City Hand Surgery Branch Association), according to the decision of Ho Chi Minh City People's Committee on February 25, 2000. This initiative received guidance and support from Professor Bruce Conolly (Figure 5. Assoc. Prof. Vo Thanh Phung, Prof. Ngo Bao Khang, Prof. Bruce Conolly (Australia), Dr. Specialist Level II Tran Thanh My, Assoc.



Figure 4. Logo of Ho Chi Minh City Hand Surgery Branch Association

Prof. Nguyen Van Thai with the Australian medical team on the day of establishing the Hand Surgery Association), Chairman of the Royal Australian Hand Surgery Society. Core members of the association included surgeons from Ho Chi Minh City Trauma and Orthopedic Center and other hospitals under the Department of Health. In the first term (2000-2002), the Congress elected an Executive Committee of 11 members, with Specialist Level II Dr. Tran Thanh My, former Director of Ho Chi Minh City Trauma and Orthopedic Hospital, as Chairman. Since 2006, the association has been led by Associate Professor Nguyen Van Thai, currently a lecturer in the Department of Trauma and Orthopedics at Pham Ngoc Thach University of Medicine in Ho Chi Minh City. Currently, the association has grown to 300 members. Since its establishment, the association has organized annual scientific conferences with participation from professors and hand surgeons from both domestic and international backgrounds. As of March 30, 2024, the association has organized 18 scientific conferences in Ho Chi Minh City and southern provinces, providing CME (Continuing Medical Education) certificates to members.

From the day of establishment, the Ho Chi Minh City Hand Surgery Branch Association has maintained good relationships with international colleagues. Many professors and surgeons from various countries have attended



Figure 5. Assoc. Prof. Vo Thanh Phung, Prof. Ngo Bao Khang, Prof. Bruce Conolly (Australia), Dr. Specialist Level II Tran Thanh My, Assoc. Prof. Nguyen Van Thai with the Australian medical team on the day of establishing the Hand Surgery Association

the branch association's conferences, presented scientific reports, performed surgeries, and jointly organized specialized classes on hand surgery for members. This approach, often called "studying abroad at home," has proven highly effective and cost-efficient. Many experts such as Professor David Mathew (USA), Professor Terry Light (USA), Professor Tobe (Japan), Professor Hoang Le My (USA), and Professor Bruce Conolly (Australia) have almost become honorary members of the association and regular collaborators with Ho Chi Minh City Trauma and Orthopedic Hospital.

In Central Vietnam, the development of hand surgery in Hue originated from urgent needs for trauma care during the Vietnam War, where doctors at Hue Central Hospital gained important experience in treating complex hand trauma. After the war, there was a significant shift toward functional rehabilitation and reconstructive surgery. In the 1980s and 1990s, international cooperation intensified, allowing for the establishment of specialized hand surgery units and application of advanced techniques such as microsurgery. Today, Hue continues to develop as a hand surgery center, prioritizing continuous training, research, and efforts to expand specialized care to rural areas despite facing challenges in capacity and equipment.

In the North, the development of

hand surgery in Hanoi began during the Vietnam War period, when surgeons at leading facilities such as 108 Central Military Hospital accumulated valuable experience in treating severe hand trauma from the battlefield. After the war, efforts were focused on reconstructive surgery and functional rehabilitation, helping restore function for those disabled by war. In the 1980s and 1990s, international cooperation increasingly expanded, bringing new techniques and advanced training in microsurgery and reconstructive hand surgery. Major hospitals like 108 Central Military Hospital and Viet Duc Friendship Hospital established specialized hand surgery units, enhancing capacity to perform complex procedures such as limb replantation and nerve repair. Particularly, the first Department of Hand Surgery and Microsurgery, established in 2004 at the Institute of Trauma and Orthopedics, Hospital 108, under the leadership of Professor Nguyen Viet Tien, pioneered the application of many microsurgical techniques in hand surgery. He was a pioneer in brachial plexus injury surgery since 2006 and performed many toe-to-thumb transfer cases for thumb reconstruction. Through many generations, microsurgical techniques have become routine procedures in the department, and annually, Hospital 108 alone performs about 2,000 hand surgeries. Today, Hanoi stands firm as a leading center for hand surgery in Vietnam.

4. DEVELOPMENT BEYOND MAJOR CITIES AND DOMESTIC COOPERATION

While Ho Chi Minh City, Hanoi, and Hue are the main centers for hand surgery in Vietnam, efforts are being made to develop hand surgery capabilities in other regions of the country. Hospitals in cities like Da Nang, Can Tho, and Hai Phong have become increasingly active in integrating hand surgery into their trauma orthopedic and plastic surgery departments. These hospitals are gradually building capacity to perform basic hand surgery procedures, particularly in trauma cases, and beginning to participate in microsurgery training programs.

Cooperation between major centers, such as between Hanoi and Ho Chi Minh City, has played an important role in disseminating knowledge and standardizing practice. For example, leading surgeons from Hanoi have participated in workshops and training sessions organized by the hand surgery association in Ho Chi Minh City, sharing expertise and promoting unified approaches to hand surgery nationwide.

5. REACHING REMOTE RURAL AREAS

Reaching those living in remote and rural areas remains a major challenge. To address this issue, major hospitals in

Hanoi, Ho Chi Minh City, and Hue have initiated community outreach programs, often in cooperation with local health departments. These programs include mobile clinics and surgical missions, where surgical teams travel to rural areas to provide essential hand surgery services, particularly for trauma and congenital hand deformities. Telemedicine is also beginning to play an important role, allowing experts from urban centers to consult with local healthcare providers in remote areas, guiding them in initial management and referring complex cases to specialized centers.

Additionally, continuing education programs aim to equip local doctors at rural hospitals with basic hand surgery skills, helping them handle more cases locally. The focus is on improving access to hand surgery services and reducing the need for patients to travel far for specialized care. This approach not only addresses current service gaps but also builds local capacity for sustainable health development.

6. TRAINING AND EDUCATION

Hand surgery and microsurgery training in Vietnam is organized at several important institutions, including Ho Chi Minh City Trauma and Orthopedic Hospital, Hue Central Hospital, and 108 Central Military Hospital in Hanoi. These hospitals provide short-term programs



Figure 6. Professor Terry Light visiting Ho Chi Minh City Trauma and Orthopedic Hospital

focusing on both theoretical knowledge and practical skills. Training typically includes hands-on workshops, cadaveric practice, and direct observation and surgical assistance. There is also close collaboration with international experts (Figure 6. Professor Terry Light visiting Ho Chi Minh City Trauma and Orthopedic Hospital) to further enhance the skills of domestic doctors.

7. CERTIFICATION IN HAND SURGERY

In Vietnam, hand surgery is not yet recognized as an independent specialty. Instead, surgeons in this field typically begin with specialty certification in trauma orthopedic surgery or plastic surgery. After achieving basic specialty foundation, they can further specialize in hand surgery through specialized training programs, often requiring many years of practical experience in orthopedic or plastic surgery departments. Vietnam's medical education system particularly emphasizes practice, so many hand surgeons develop skills and expertise through work at specialized hospitals or clinics.

8. MODERN TECHNIQUES

Hand surgery in Vietnam encompasses a range of procedures, including:

Microsurgery: Limb replantation, tendon transfers, and nerve grafts.

Reconstructive surgery: Free flap transfers, bone grafts, and soft tissue reconstruction.

Minimally invasive surgery: Carpal tunnel release, trigger finger release, and wrist arthroscopy.

Brachial plexus injuries: Brachial plexus injuries are common in Vietnam due to high traffic accident rates, particularly involving motorcycles. Leading hospitals such as Ho Chi Minh City Trauma and Orthopedic Hospital, 108 Central Military Hospital, and Hue Central Hospital specialize in managing these complex injuries through advanced microsurgical techniques, including nerve grafts and transfers. A multidisciplinary approach, including surgeons, neurologists, and rehabilitation specialists, is key to maximizing recovery. Challenges remain in early diagnosis and access to specialized

care, particularly in rural areas, but efforts are focused on enhancing surgical expertise, early intervention strategies, and comprehensive rehabilitation programs to improve outcomes for patients with these severe injuries.

Congenital hand deformity surgery: Correcting deformities such as syndactyly, radial deficiency, thumb hypoplasia, and polydactyly. Congenital hand deformity surgery in Vietnam is primarily performed by orthopedic surgeons, particularly at pediatric hospitals.

Rehabilitation: Post-surgical rehabilitation programs integrating physical therapy and occupational therapy.

9. CHALLENGES AND FUTURE DIRECTIONS

While Vietnam has made significant strides in hand surgery, the field still faces challenges such as the need for more specialized training centers, equipment, and a unified national hand surgery association. Establishing a Vietnamese Hand Surgery Association could further consolidate efforts, raise professional standards, and promote continuous learning.

To attract and train young doctors for the hand surgery specialty, leading hospitals in Vietnam such as Ho Chi Minh City Trauma and Orthopedic Hospital, Hue Central Hospital, 108 Central Military Hospital, and Viet Duc Friendship Hospital all implement comprehensive training programs. These programs harmoniously combine theoretical knowledge and practice through workshops and direct surgical observation. Particularly, collaboration with international experts brings specialized courses and short-term fellowship opportunities abroad, helping young doctors access the most advanced techniques. Mentorship programs, continuous seminars, and scientific research opportunities not only attract the interest of residents but also affirm the strong development potential of hand surgery, creating a foundation for future progress of this medical field in Vietnam.

International cooperation remains crucial for future development. Vietnamese hand surgeons are increasingly participating in global forums such as the International Federation of Societies for

Surgery of the Hand (IFSSH) to exchange knowledge and learn from leading experts.

10. CONCLUSION

Hand surgery in Vietnam has evolved from modest beginnings to become a specialized field thanks to the contributions of pioneers. Although much work remains to be done, the foundation has been laid for a promising future. With continued investment in education, cooperation, and infrastructure, Vietnam is well-positioned to enhance its reputation as a leader in hand surgery in Southeast Asia.