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マニー株式会社
取締役兼代表執行役社長　齊藤 雅彦

# 欧州白内障屈折矯正手術学会において
# 眼科ナイフの特集冊子が配布されました（英語）

2024 年 9 月 6 日（金）～ 9 月 10 日（火）にスペイン・バルセロナで開催された、第 42 回欧州白内障屈折矯正外手術学会において、当社眼科ナイフの特集冊子が来場者に配布されました。

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FORGING PRECISION

# The MANI Revolution in Ophthalmic Knife

## Abstract

Ophthalmic knives from MANI, INC. (Utsunomiya, Tochigi, Japan) have garnered significant attention within the ophthalmic community due to a combination of innovative design, advanced materials and rigorous manufacturing processes.

This paper aims to explore the distinctive attributes of the MANI Ophthalmic Knife and to assess its comparative advantages over other brands within the field of ophthalmic surgery. By conducting a comprehensive literature review on the historical development and current state of ophthalmic knives, with a particular focus on the renowned quality of Japanese surgical instruments, this paper seeks to understand the factors contributing to MANI Ophthalmic Knife's reputation.

Through in-depth interviews with surgeons who have utilized MANI Ophthalmic Knife, this paper investigated the specific features that render these instruments superior in sharpness, durability and overall performance.

By comparing MANI Ophthalmic Knife to other brands employed by these surgeons, the clinical tests they conducted identified vital differentiators and assessed the impact of these features on surgical outcomes and surgeon satisfaction.

Ultimately, this paper provides valuable insights into the clinical performance and perceived benefits of MANI Ophthalmic Knife, contributing to the ongoing discourse on advancements in ophthalmic surgical instrumentation.

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# Introduction

## A history of ophthalmic knives: The Japanese contribution

The development of ophthalmic surgery is intrinsically linked to advancements in surgical instrumentation.[1] Central to this progress is the ophthalmic knife, a tool that has undergone significant refinement over time. Its evolution mirrors the broader trajectory of surgical techniques, becoming increasingly specialized and precise.

Japan has emerged as a global leader in the production of ophthalmic knives.[2] Renowned for their meticulous craftsmanship and technological prowess, Japanese manufacturers have significantly enhanced these instruments' precision, safety and efficiency.[3] This contribution has been instrumental in elevating the standards of ophthalmic surgery worldwide.

## The Japanese mastery of ophthalmic knives

The 19th and 20th centuries saw a rapid advancement in ophthalmology, driven by a deeper comprehension of the anatomy and physiology of the eye. This period marked the development of more sophisticated surgical techniques, necessitating the creation of specialized instruments. Ophthalmic knives evolved from general surgical tools into highly specialized implements designed for specific eye procedures.

Japan's pre-eminence in the production of ophthalmic knives is testament to a confluence of historical, cultural and technological factors. Rooted in the nation's rich metallurgical heritage, the manufacture of these instruments reflects a centuries-old commitment to precision and craftsmanship.[4]

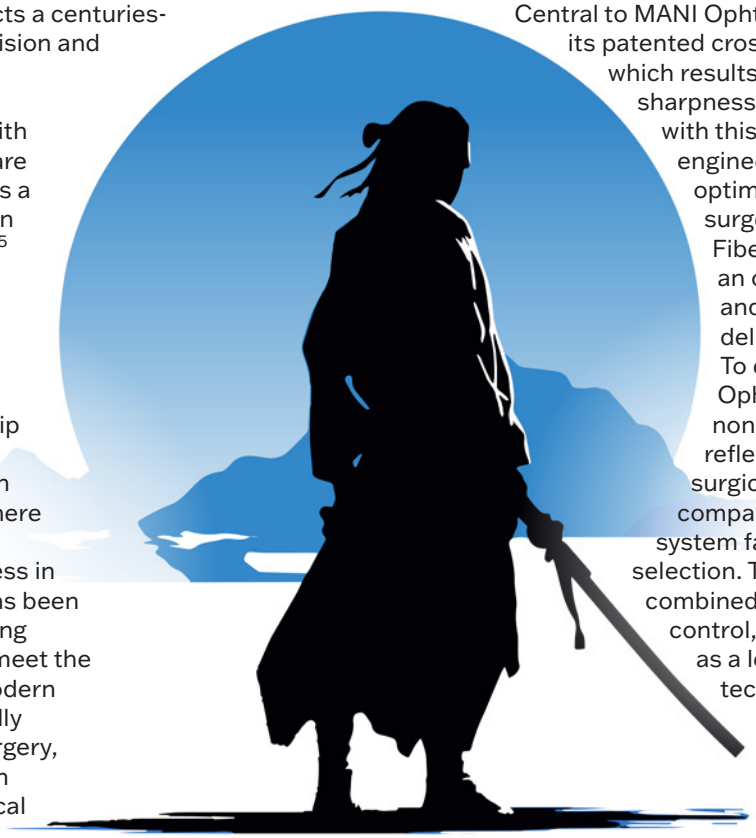
The samurai tradition, with its emphasis on blade care and sharpness, serves as a foundational influence on Japanese metalworking.[5] This historical legacy has been seamlessly integrated into the production of surgical instruments with meticulous craftsmanship and attention to detail evident in the production of ophthalmic knives, where precision is paramount. Moreover, Japan's prowess in precision engineering has been instrumental in developing ophthalmic knives that meet the exacting demands of modern surgery.[6] This is especially crucial in ophthalmic surgery, where minute details can significantly affect surgical outcomes. The nation's mastery of materials science has enabled the creation of knives that are not only sharp but also durable and resistant to corrosion.[7] This foundation of technological expertise has been complemented by a relentless pursuit of innovation, resulting in ophthalmic knife designs that incorporate ergonomic features and cutting-edge technologies. Rigorous quality control standards ensure that Japanese ophthalmic knives consistently meet the highest standards of performance and safety.

The economic appeal of reusing ophthalmic instruments may be offset by potential compromises in patient safety and instrument integrity.[8] Repeated sterilization cycles can degrade the structural integrity of instruments, increasing the risk of their failure, component detachment and subsequent complications.[9] Furthermore, the effectiveness of sterilization processes in eliminating pathogenic microorganisms from complex instrument designs may be inconsistent, potentially leading to heightened infection risks.[10] These factors collectively suggest a potential inverse relationship between the cost-effectiveness of instrument reuse and adherence to stringent safety and regulatory guidelines.

## MANI Ophthalmic Knife: A technological advance in ocular surgery

In recent years, there has been a notable advancement in ophthalmic knife technology, with the Japanese manufacturer MANI, INC. emerging as a key player.

MANI Ophthalmic Knife has gained significant recognition within the ophthalmic community for its exceptional quality and innovative design. Characterized by a unique combination of features, these instruments have set a new benchmark for surgical precision and efficiency.



Central to MANI Ophthalmic Knife's success is its patented cross-lapped edge technology, which results in knives of exceptional sharpness and durability.[11] Coupled with this is a meticulously engineered bevel shape that optimizes performance during surgery. The use of MANI Hard Fiber Stainless Steel provides an optimal blend of strength and flexibility, essential for delicate ocular procedures.[12] To enhance visibility, MANI Ophthalmic Knife undergoes a non-glare treatment, minimizing reflections and improving surgical conditions. Finally, the company's color-coded handle system facilitates efficient instrument selection. These distinctive features, combined with rigorous quality control, have positioned MANI, INC. as a leader in ophthalmic knife technology.

By prioritizing innovation and patient safety, MANI, INC. has established

a reputation for excellence in ophthalmic instrument design. As the field of ophthalmology continues to advance, MANI, INC. is poised to play a pivotal role in shaping the future of ocular surgery.

## Objective

This paper aimed to evaluate the distinctive attributes of MANI Ophthalmic Knife and compare its performance to other brands within the field of ophthalmic surgery. By conducting in-depth interviews with surgeons who have used MANI Ophthalmic Knife, the clinic testing sought to identify specific features contributing to their perceived superiority in terms of sharpness, durability and overall performance.

## Methodology

A questionnaire was developed to gather insights into surgeon preferences and selection criteria for ophthalmic knives. This was complemented by in-depth interviews to gain a deeper understanding of the factors influencing the choice of ophthalmic knives and to inform strategies for enhancing instrument design and availability.

A total of eight ophthalmic surgeons were interviewed, representing a broad range of practice types and geographic locations.

## Cutting edge choices

Dr. Morgan Micheletti's initial selection of MANI Ophthalmic Knife encompassed a comprehensive set, including the MSL10, MSP10, MSL24, MSL24SH, MLR50 and MCU26SH. This assortment aligns closely with standard blade configurations for cataract procedures, suggesting Dr. Micheletti's selection is in line with common surgical practices.

Dr. Francis Mah opted for a more focused selection with the MSL24SK and MVR21ASK. While adhering to typical choices for cataract surgery, Dr. Mah's inclusion of the safety-oriented MVR21ASK blade is noteworthy, suggesting a more personalized selection.

Dr. Cathleen McCabe's initial knife selection included the MSP10 and MSL22, reflecting a standard configuration often used in cataract surgeries. This choice aligns with the typical instrumentarium for procedures in her field.

Dr. Susan MacDonald's selection showcased an authentic combination of the MCU26, MSL24, and MST15 knives, demonstrating a preference for a broader range of blade types commonly employed in various ophthalmic procedures.

Dr. Mark Lobanoff's choice of MANI Ophthalmic Knife – MSL24, MST15MK and MCU26 – reflects Dr. Lobanoff's

### A Comparative Look at Surgeons' MANI Ophthalmic Knife Selections and their Unique Preferences

| Name of Doctor | MANI Ophthalmic Knife Tested |
|---|---|
| Dr. Morgan Micheletti | MSL10, MSP10, MSL24, MSL24SH, MLR50 and MCU26SH |
| Dr. Francis Mah | MSL24SK and MVR21ASK |
| Dr. Cathleen McCabe | MSP10 and MSL22 |
| Dr. Susan MacDonald | MCU26, MSL24 and MST15 |
| Dr. Mark Lobanoff | MSL24, MST15MK and MCU26 |
| Dr. David Lubeck | MSL22SH, MSL23AB, MSL22AB, MSP10L and MST15MK |
| Dr. Arun Gulani | MSL29AB, MCU26SH, MSP10 and MST15MK |
| Dr. Mitchell Jackson | MSL20 and MSP10L |


MCU26


MSL22


MSL22AB


MSL22SH


MSP10

MST15

MST15MK

MSL22SK

MVR20ASK

authentic combination, hence also demonstrating a preference for use in various ophthalmic procedures.

Dr. David Lubeck's choice of ophthalmic knives, including the MSL22SH, MSL23AB, MSL22AB, MSP10L and MST15MK, reveals a more nuanced approach. The inclusion of two MSL22AB knives, characterized by their "arched" design, is particularly noteworthy. This blade type is often favored by experienced surgeons who appreciate its unique attributes, suggesting Dr. Lubeck's preference for specialized tools.

Dr. Arun Gulani's selection echoed Dr. Lubeck's preference for a specialized blade with the inclusion of the MSL29AB alongside the MCU26SH, MSP10 and MST15MK. This distinctive choice underscores the individualized nature of surgical preferences and the importance of a diverse instrumentarium to cater to varying surgical needs.

Dr. Mitchell Jackson's choices of MANI Ophthalmic Knife were the MSL20 and MSP10L.

## Results: Surgeons' Experiences with MANI Ophthalmic Knife

### Precision perfected

Dr. David Lubeck is an ophthalmologist with a background in metalworking. He emphasizes the importance of blade sharpness and credits his metalworking skills for his understanding of blade architecture and function. "What I learned about surgery in many ways came from my teachers of master metals," he said.

Dr. Lubeck uses MANI Ophthalmic Knife in various procedures, including cataract surgery, lens exchange and Yamane lens insertion, and highlighted their sharpness and ease of use. "With the MANI Ophthalmic Knife, and a side port blade especially, they fixate on the light. The blade can be passed through with minimal pressure," he explained.

Dr. Lubeck prefers the 1 mm trapezoidal knife for side port procedures and appreciates the unique curved keratome feature, which facilitates precise tracking. "The MANI ophthalmic knife is generally much thinner. This curvature makes the keratome much easier to track precisely with minimal resistance," he emphasized.

Dr. Lubeck used to use Alcon and BVI knives but switched due to a decline in sharpness experienced with those brands. "With other knives, I discovered the sharpness had gone down significantly through time," he said. Based on practical experience and observed durability of the disposable MANI Ophthalmic Knife, Dr. Lubeck emphasized sharpness as the most critical factor in ophthalmic knife selection, outweighing cost considerations. "For me, sharpness is 80% of the value of the ophthalmic knife," he added.

Dr. Lubeck commends the quality and craftsmanship of MANI Ophthalmic Knife, attributing it to the Japanese tradition of fine metalworking. "It's not just quality,but also the Japanese sense of precision that makes a difference. It is due to the Japanese tradition of fine metalworking," he said. He acknowledges the significant contributions of Japanese surgeons and instruments to ophthalmic advancements, including the Yamane technique, Akahoshi cannula and Nagahara chopper.

> "The MANI Ophthalmic Knife is generally much thinner. This curvature makes the keratome much easier to track precisely with minimal resistance."
>
> **- Dr. David Lubeck**

Dr. Lubeck concludes that MANI Ophthalmic Knife offer exceptional quality and consistency, making cataract surgery easier for surgeons of all skill levels. "The better the knife technology, the more suitable for all surgeons," he said. He also emphasized the importance of a reliable ophthalmic knife for achieving consistent, routine incisions. "A perfect knife will make every case seem very similar and improve the patient's prognosis," he explained.

### A samurai's precision in surgery

Dr. Morgan Micheletti, a leading cataract surgeon at Berkeley Eye Center, shared his experience with MANI Ophthalmic Knife. Renowned for his high-volume practice, Dr. Micheletti emphasized the sharpness, consistency and exceptional quality of the knives, which he frequently uses in cataract surgeries. Dr. Micheletti praised the sharpness and reliability of MANI Ophthalmic Knife, which he has come to rely on for consistently delivering precise

incisions. He draws a comparison between these knives and others he has used, noting that MANI Ophthalmic Knife stands out due to their superior performance, which he attributes to the meticulous craftsmanship rooted in Japanese steel manufacturing.

"What struck me the most was that with the MANI Ophthalmic Knife, you touch the cornea, and you're in, you know, which is great; that's what you want," he noted.

Despite his preference for diamond knives for side ports and limbal relaxing incisions (LRIs), Dr. Micheletti finds that MANI Ophthalmic Knife offers a compelling alternative, especially considering its cost-effectiveness.

Dr. Micheletti has performed approximately 30 surgeries using MANI Ophthalmic Knife and has found it to deliver smooth, precise cuts without issues. He emphasized that there was no significant learning curve when switching to these knives, a testament to their ease of use despite their remarkable sharpness. "I didn't have a single dull blade. It was very refreshing to have a knife that would consistently do what it was supposed to do," he said.

Dr. Micheletti highlights the balance MANI Ophthalmic Knife strikes between cost and quality, stating that he would consider using them for various types of surgeries if they remained financially viable. "Regarding the cost and the quality, I don't know if I've used a better knife," he said.

Beyond the technical aspects, Dr. Micheletti touched on the cultural significance of Japanese precision, noting how this attention to detail is evident in the construction and performance of MANI Ophthalmic Knife. He likened their precision to that of a samurai sword, a powerful metaphor that speaks to the knives' craftsmanship and effectiveness. "When I think of Japanese steel, I think of a samurai sword," he said. "Well, they've just miniaturized a samurai sword into a cataract surgery instrument."

Dr. Micheletti strongly endorses MANI Ophthalmic Knife, citing their reliability, precision and the cultural craftsmanship underpinning their design. He expressed confidence in the knives' ability to perform consistently in both standard and complex cataract surgeries. "Yes, absolutely. This is the samurai sword of cataract knives," he said.

In conclusion, Dr. Micheletti's experience with MANI Ophthalmic Knife highlights their value in surgical practice, from their sharpness and consistency to their cultural and technical excellence. His insights provide a compelling case for considering MANI Ophthalmic Knife as a top choice for cataract surgery. "I would have absolutely no problem with replacing the knife in my pack with MANI Ophthalmic Knife," he said.

## Precision meets sustainability

Dr. Cathleen McCabe, a seasoned cataract and refractive surgeon with over 27 years of experience, shared her insights on the use of MANI Ophthalmic Knife. Dr. McCabe has utilized various knife types throughout her career as a practitioner focused on cataracts and other anterior segment surgeries. Her evaluation of MANI Ophthalmic Knife reveals their potential in balancing precision, sustainability and cost-effectiveness.

Dr. McCabe, who typically prefers diamond knives for their sharpness and durability, was impressed with the MANI Ophthalmic Knife. She highlighted that the "knife handles are very light," offering a different feel compared to other disposable knives.

Despite her preference for diamond knives, which she has relied on for over 14 years, Dr. McCabe found that, "the MANI Ophthalmic Knife performed nicely and were consistent in sharpness throughout my procedures."

In her practice, Dr. McCabe uses diamond knives for most routine cataract surgeries, including a side port stiletto-style diamond trapezoidal blade and a 2.2 mm diamond main incision blade. For more complex cases, such as post-RK patients requiring a scleral tunnel, she often begins with a steel blade due to the specific design needs. Reflecting on her use of MANI Ophthalmic Knife, she noted, "The MANI Ophthalmic Knife seemed strong, and I did not experience any issues with sharpness. She emphasized that "as long as you don't dent the knife at the moment you open the packaging, they maintain their effectiveness."

> "What struck me the most was that with the MANI Ophthalmic Knife, you touch the cornea, and you're in, you know, which is great; that's what you want."
>
> **- Dr. Morgan Micheletti**

Dr. McCabe has been an advocate for sustainability in surgical practice. Although reusable blades have

the least environmental impact, she appreciated that the MANI Ophthalmic Knife could offer an environmental advantage. “The lighter handles of the MANI Ophthalmic Knife could reduce transportation costs and environmental impact. The lighter the product, the less energy is needed to transport it,” she said. She also mentioned the importance of considering the manufacturing location in sustainability discussions, as transportation distances contribute to the overall environmental footprint.

> “For surgeons seeking a balance between quality, cost and environmental responsibility, MANI Ophthalmic Knife represents a promising choice.”
>
> **- Dr. Cathleen McCabe**

On the topic of cost, Dr. McCabe acknowledged that while diamond knives are expensive, they can be cost-effective over time if properly maintained. However, she added, “For disposable options, like MANI Ophthalmic Knife, if cost is reasonable and quality is up to other alternatives, surgeons will use them.” She suggested that MANI Ophthalmic Knife might be “competitively priced,” making them an attractive option without compromising quality.

Regarding practicality, Dr. McCabe pointed out that disposable metal knives like the MANI Ophthalmic Knife are easier to manage in training settings, particularly for technicians and scrub techs. “Disposable instrument metal knives are easier to train with as it simplifies the preparation process by just opening the packaging and putting it on the tray,” she noted.

Dr. McCabe’s evaluation of MANI Ophthalmic Knife underscores its potential in modern ophthalmic surgery. These knives offer a viable alternative to traditional options with consistent sharpness, a strong build and a focus on sustainability.

“For surgeons seeking a balance between quality, cost and environmental responsibility, MANI Ophthalmic Knife represents a promising choice,” she concluded.

## Versatility, performance and sustainable practice

Dr. Francis Mah, a seasoned ophthalmic surgeon, provided insights into the performance of MANI Ophthalmic Knife, with his extensive experience in cataract surgery and other anterior segment procedures allowing for a comprehensive evaluation of their capabilities.

Dr. Mah highlighted the versatility of MANI Ophthalmic Knife, noting its use across various surgical procedures, including cataract surgery, corneal and refractive procedures. He emphasized the consistent sharpness of the knives in complex surgical scenarios. “I have used MANI Ophthalmic Knife for several types of surgery on about ten patients, and the knives always maintained their sharpness,” he stated. He also underscored the importance of safety in ophthalmic surgery, praising the inclusion of a guard mechanism in MANI Ophthalmic Knife, a feature designed to reduce the risk of accidental needle sticks and other injuries. This aligns with broader industry efforts to enhance safety practices in healthcare settings. “I also liked that the MANI Ophthalmic Knife is guarded; before the advent of the MANI Ophthalmic Knife, surgeons had only one option, which was the BVI, which was not the most preferred option,” he said.

Dr. Mah emphasized the critical role of ophthalmic knife sharpness in achieving optimal surgical outcomes. He noted that the superior sharpness of MANI Ophthalmic Knife contributed to precise incisions and reduced tissue trauma. “Sharper knives are better as surgeons do not have to struggle and can make cleaner incisions with less trauma,” Dr. Mah observed.

While acknowledging the performance advantages of diamond knives, Dr. Mah highlighted the practical challenges associated with their maintenance and cost. He emphasized the importance of balancing performance with cost-effectiveness in clinical practice. “Each diamond blade costs several thousand dollars and requires a dedicated person for cleaning and sharpening,” he explained. Dr. Mah also discussed the potential benefits of color-coded handles for efficient instrument identification and the growing emphasis on sustainability in the medical device industry.

Dr. Mah expressed satisfaction with the performance of MANI Ophthalmic Knife. He highlighted their sharpness compared to traditional disposable knives, noting that this attribute translates to cleaner incisions and reduced surgical trauma. Furthermore, he commended the consistency in ophthalmic knife performance, a critical factor for predictable surgical outcomes. “Generally, our currently used knives (BVI) are not the sharpest, so it was nice to have the MANI Ophthalmic Knife, which was

sharper. Sharper knives are better as surgeons do not struggle and can make cleaner incisions with less trauma. One of the problems with disposable knives is blade-to-blade variation. I found the MANI Ophthalmic Knife very precise with no variation," he said.

When compared to other brands such as Alcon and BVI, Dr. Mah favored MANI Ophthalmic Knife due to its consistent performance and the inclusion of safety mechanisms. He also praised the packaging for its simplicity and effectiveness in protecting the knife.

Dr. Mah acknowledged the importance of sustainability in healthcare and expressed interest in exploring recycling options for surgical instruments. He emphasized the need for rigorous sterilization processes for reusable knives while acknowledging the potential environmental benefits of such practices. "Science should dictate the decisions surrounding adopting sustainable technologies in ophthalmic knives. Manufacturers can help with more efficient and sustainable packaging of knives. Recycling disposable knives would be a sustainable option that the industry should explore further," he said.

Dr. Mah preferred color-coded ophthalmic knives, as they enhance efficiency and reduce the risk of errors in the operating room. While acknowledging the importance of consistent performance regardless of color, he highlighted the practical benefits of color coding. "While the color coding system is not unique to MANI, it contributes to efficiency and reduces the risk of errors in the operating room," he observed.

He shared a clinical case involving a complex cataract surgery where MANI Ophthalmic Knife was used successfully, and emphasized the importance of knife sharpness in minimizing tissue trauma and achieving optimal surgical outcomes. "The surgical team used the same blade repeatedly in this surgery, and it stayed sharp. The Guard feature on the MANI Ophthalmic Knife protects the team from possible injuries," he explained.

In conclusion, Dr. Mah recommended MANI Ophthalmic Knife due to its exceptional sharpness, consistency and safety features. He believes these attributes significantly enhance surgical outcomes and improve patient experience.

## Enhancing surgical outcomes

Dr. Arun Gulani, a globally recognized ophthalmic surgeon, emphasized the pivotal role of patient experience and surgical precision in his practice. His boutique clinic model is centered around delivering exceptional care, transforming ophthalmic surgery from a routine procedure into a refined art form. This patient-centric philosophy is evident in his meticulous selection of surgical instruments, particularly ophthalmic knives.

Dr. Gulani highlighted the exceptional sharpness of MANI Ophthalmic Knife. "I find them extremely sharp, and this is a feature that makes them different," he stated. This precision, he emphasized, allows for controlled incisions, minimizing tissue trauma and ultimately enhancing surgical outcomes. He also praised the knives for their durability and consistency. "I want a sharp and very comfortable ophthalmic knife for the patient, and that's the edge I have found in the MANI Ophthalmic Knife," he explained. This statement underscores Dr. Gulani's patient-focused approach, where minimizing discomfort is paramount. He believes that high-quality instruments, such as MANI Ophthalmic Knife, are instrumental in achieving this goal.

Dr. Gulani's vision of patient care is encapsulated in his aspiration: "I want the patient to be dancing when I'm done," he said. This emphasis on a positive patient experience, characterized by minimal discomfort and rapid visual recovery, is intricately linked to his choice of surgical tools.

While acknowledging the importance of cost-effectiveness in healthcare, Dr. Gulani prioritized quality. "Cost is always the last consideration because I want the patient to get the best quality," he said. His preference for MANI Ophthalmic Knife is based on its ability to deliver high-quality performance consistently.

> "Sharper knives are better as surgeons do not have to struggle and can make cleaner incisions with less trauma."
>
> **- Dr. Francis Mah**

Dr. Gulani's endorsement of MANI Ophthalmic Knife, based on his experience with approximately 10-12 knives, positions these instruments as a promising option for ophthalmic surgeons seeking to enhance their surgical outcomes and patient satisfaction.

## Bridging cataract surgery and ophthalmology training

Tanzania is an East African country with a population of about 60 million, and only approximately 80 practicing ophthalmologists.[13] Dr. Susan MacDonald, through her foundation – EyeCorps – has spent over six years working in Tanzania, particularly in its rural areas, where she has gained extensive experience and understanding of the local healthcare challenges. While there recently, she visited a district hospital assigned by the government to different regions. Her work with local ophthalmologists led to a startling discovery: the cataract blindness rate in Tanzania stands at approximately 2-5%.

> "The MANI Ophthalmic Knife worked very well on all the eyes I operated on, and all the residents in training gave the knives two thumbs up."
>
> **- Dr. Susan MacDonald**

In discussing her surgical tools, Dr. MacDonald praised the effectiveness of MANI Ophthalmic Knife used in small incision cataract surgery. She emphasized the importance of using high-quality instruments, such as the crescent knife and side port, which significantly enhance the precision and success of these delicate procedures.

The quality of MANI Ophthalmic Knife, particularly their sharpness and durability, was crucial during her work in Tanzania, she said. "A high-quality knife is essential for optimal incision creation in cataract surgery. The incision is a critical component of the procedure, and the knife's performance directly impacts surgical outcomes," she added.

Dr. MacDonald's comments on MANI Ophthalmic Knife reflected her overall positive experience. "The MANI Ophthalmic Knife worked very well on all the eyes I operated on, and all the residents in training gave the knives two thumbs up," she said.

Dr. MacDonald highlighted the importance of having reliable and well-maintained surgical instruments, noting that even minor improvements in equipment can lead to significant advances in surgical outcomes. "The careful selection and use of tools can substantially impact patient care and surgical training," she said.

High-quality training undoubtedly forms the backbone of addressing Tanzania's ophthalmic surgery challenges. Yet, the steep cost of essential equipment, often exceeding $200,000 for a fully equipped surgical unit, remains a formidable obstacle. This financial burden frequently forces medical professionals to rely on suboptimal tools, compromising patient care.

Dr. MacDonald's experiences illuminate the broader repercussions of high-quality medical donations. Well-crafted surgical instruments enhance immediate patient outcomes and bolster local healthcare systems. These contributions are instrumental in bridging the gap in underserved regions.

"Having the proper ophthalmic knife is very important in small incision cataract surgery. In my experience with MANI Ophthalmic Knife, each one of the knives was helpful in specific steps of cataract surgery," she said.

In summary, Dr. MacDonald's insights underscore the vital role of high-quality surgical tools and comprehensive training in transforming ophthalmic care in rural Tanzania. Her work highlights the interconnectedness of global health efforts and the profound impact of dedicated support in addressing eye care challenges.

## Precision in every cut

Dr. Mark Lobanoff, owner of OVO LASIK + Lens (Minnesota, USA)—a practice specializing in refractive laser surgery—shared his experience and impressions of using MANI Ophthalmic Knife in cataract surgeries. Dr. Lobanoff, a seasoned surgeon with extensive experience in refractive cataract surgery, tested the MANI Ophthalmic Knife on approximately 10 cases. He meticulously evaluated the knives under high magnification, offering a detailed assessment of their performance.

Dr. Lobanoff acknowledges the importance of knife quality in surgical procedures, especially in high-volume practices like his, where precision and efficiency are paramount. "Occasionally, I'll get knives for surgery that, at a glance, look fine," he noted, emphasizing the importance of closely examining the knives. "Under high magnification, sometimes you can see the tiniest front tip bent back in the manufacturing process," he

explained, highlighting the critical role of knife integrity in ensuring smooth incisions.

The MANI Ophthalmic Knife, however, passed his scrutiny with flying colors. “The MANI Ophthalmic Knife was impressive under high magnification,” Dr. Lobanoff stated. “You can see along the edge—everything is crisp and sharp. The knives I received were excellent.” He specifically praised the cutting efficiency of the knives, noting how smoothly they entered through the corneal tissue. “What impressed me was how sharp the knife was. The sharpness of the edge, both for the paracentesis and clear corneal incisions, is excellent.”

When comparing the MANI Ophthalmic Knife to others he has used, Dr. Lobanoff expressed a high level of satisfaction. “I would say these are higher in quality than what I’m typically used to using. Very smooth, with little resistance. The knife went where I wanted it to go,” he remarked. He rated the knives 9/10, stating, “The only reason I haven’t given a 10 is I haven’t used a thousand yet.” This high praise underscores his confidence in the knives’ performance and quality.

Moreover, Dr. Lobanoff discussed the broader implications of using such high-quality instruments, particularly in complex cases. “I would agree that a great place to use them would be in a complex case,” he said, referencing scenarios like RK surgeries with radial linear incisions. He also noted their potential utility in cases with pseudo-exfoliation or floppy iris, where precision is crucial. He reflected on his preference for sharp knives. “I like a very sharp knife. The most dangerous knife is a dull knife,” he firmly stated. Dr. Lobanoff even considered the possibility of replacing his diamond knives with MANI Ophthalmic Knife for certain procedures, which is a testament to his satisfaction with their performance.

Furthermore, Dr. Lobanoff emphasized the importance of balancing quality with cost, particularly in high-volume procedures like cataract and lens surgeries. “With cataract and lens surgery, because volumes are so high, you must consider the cost. We manage our own OR. We are not passing costs off to the hospital. We look carefully at the bottom line. As a surgeon, I want to work with excellent tools. I say that the balance is 50/50,” he explained. This highlights the dual priority of maintaining high standards in surgical instruments while also being mindful of financial constraints.

When asked about his impressions of Japanese knives, Dr. Lobanoff spoke highly of their reputation for precision and quality. “Certain countries have a reputation for precision. Traditionally Germany and Japan are known for precision and creating optics. Japanese are well known for being stringent on quality control. Typically, I associate precision, engineering and design from Japan with high quality,” he shared. This recognition of Japan’s engineering excellence reinforces the perceived reliability and performance of the MANI Ophthalmic Knife in surgical settings.

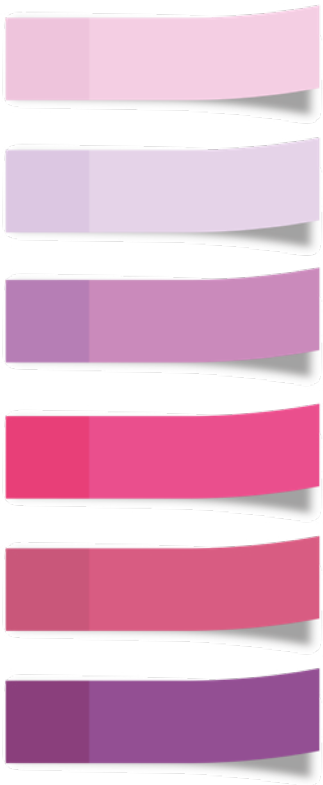
Dr. Lobanoff also delved into the use cases for MANI Ophthalmic Knife, particularly in complex surgical scenarios. With RK, you have radial, linear incisions within the cornea. If an incision is placed in a region where you want to create the main corneal incision, you must be careful with wound construction as you could end up splitting radial lines otherwise,” he explained.

He further elaborated on the utility of these knives in challenging cases. “So having a well-constructed incision in complex cases would be helpful. In addition, if you have a case where you are worried about the outcomes, let’s say pseudo-exfoliation or floppy iris, the MANI Ophthalmic Knife could also be a very useful choice,” said Dr. Lobanoff. Despite the benefits in complex situations, Dr. Lobanoff confidently stated, “And for regular cases, too, MANI Ophthalmic Knife makes a very nice wound. I have no qualms in using them in any case.”

In discussing his preferences for surgical instruments, particularly concerning sharpness, Dr. Lobanoff shared his personal philosophy, “I grew up in Detroit. In my hands, I like sharp knives. For instance, for my EVO Vision cases, I like to use a diamond knife. I could get by with a microkeratome knife, but I like my knives sharp. I could consider replacing my diamond knives with the MANI Ophthalmic Knife.” His preference for sharp knives underlines the critical importance of precision in achieving successful surgical outcomes, particularly in delicate procedures like EVO Vision.

Finally, Dr. Lobanoff addressed the practical considerations of knife choice in different practice settings, particularly for smaller practices versus larger ones. He observed, “If you were a smaller practice and the caseload was not

> “Color coding would be beneficial for the assistant. Many times, I’m reaching for things and grabbing things. Sometimes, being able to say ‘give me the red or blue knife’ would be helpful.”
>
> **- Dr. Mark Lobanoff**



quite so high, you may have more of a luxury to choose exactly the tool you want. It comes down to surgeon preference. We tend to order something and keep using it. I was excited to try the MANI Ophthalmic Knife. It shakes things up. Makes me try something new." This comment highlights the influence of practice size and case volume on surgical instrument selection and the openness to innovation that MANI Ophthalmic Knife has inspired in his practice.

Regarding potential operational advantages, Dr. Lobanoff suggested that color coding of knives (like in the MANI Ophthalmic Knife) could enhance efficiency in the operating room, particularly in larger or fast-paced settings. "Color coding would be beneficial for the assistant. Many times, I'm reaching for things and grabbing things. Sometimes, being able to say 'give me the red or blue knife' would be helpful," he explained. This practical insight reflects Dr. Lobanoff's attention to detail and the importance of streamlining surgical workflows for optimal performance.

## Sharper precision, superior outcomes

Dr. Mitchell Jackson, the founder and medical director of Jacksoneye in Lake Villa, Illinois (USA), shared his experiences with the MANI Ophthalmic Knife. As an experienced ophthalmic surgeon, Dr. Jackson has had the opportunity to work with a variety of surgical instruments throughout his career. Still, he noted that the MANI Ophthalmic Knife stood out for its exceptional performance in the operating room.

Reflecting on the precision and sharpness of the knives, Dr. Jackson remarked, "They are sharp. They are the sharpest knives I've ever used." This statement underscores his confidence in the superior cutting ability of the MANI Ophthalmic Knife compared to other brands. "Usually, I use a Weck-Cel sponge for counter-traction with other knives, but with the MANI Ophthalmic Knife, I didn't even have to do that," he explained, illustrating the efficiency and ease of use these knives provide.

> "The other thing is the cost. If it is the same and there is no bundling, I would get these because I don't have to use the Weck-Cel sponge."
>
> **- Dr. Mitchell Jackson**

Dr. Jackson also shared an anecdote about a challenging case in which he had to perform an anterior vitrectomy, a delicate procedure often complicated by the softness of the eye. He found the MANI Ophthalmic Knife particularly advantageous in this situation. "The MANI Ophthalmic Knife provides a remarkable advantage when operating on soft eyes," he said. The sharpness of the knives allowed him to perform side port incisions with precision, even on a soft eye. "My vitrectomy was great, and I could easily perform side port incisions on soft eyes," he added, highlighting the knives' reliability in complex scenarios.

When discussing the potential drawbacks of the knives, Dr. Jackson had only positive feedback. "I see no disadvantage with MANI Ophthalmic Knife once the user acknowledges its sharpness," he stated confidently. He used the knives for all his cataract surgeries, noting that he had received two boxes—one for side port incisions and one for the main incision. Dr. Jackson expressed his intention to continue using MANI Ophthalmic Knife, particularly in cases involving soft eyes. "I'll still buy a couple of boxes of the MANI Ophthalmic Knife for use in patients with soft eyes," he mentioned, reinforcing his satisfaction with their performance.

Cost was another factor Dr. Jackson considered. "The other thing is the cost. If it is the same and there is no bundling, I would get these because I don't have to use the Weck-Cel sponge," he explained, indicating that the knives not only improve surgical outcomes but could also offer cost efficiency.

Dr. Jackson concluded the interview by recommending the MANI Ophthalmic Knife to his colleagues, particularly those facing difficulties with their current instruments. He shared that he had already suggested them to a fellow surgeon struggling with other knives. "He'll love the MANI Ophthalmic Knife for its sharpness," Dr. Jackson said, confidently endorsing the product.

In summary, Dr. Jackson's experience with the MANI Ophthalmic Knife highlights its exceptional sharpness, ease of use and potential for improving surgical outcomes, particularly in complex cases involving soft eyes. His endorsement serves as a testament to the high-quality performance of MANI Ophthalmic Knife in the field of ophthalmic surgery.

# Conclusion

In conclusion, this paper underscores the significant impact of MANI Ophthalmic Knife within the field of ocular surgery, demonstrating their superiority in terms of sharpness, durability and overall surgical performance. Through extensive interviews with experienced surgeons, it has become clear that MANI Ophthalmic Knife upholds the esteemed tradition of Japanese craftsmanship and introduce innovative features that enhance surgical precision and efficiency.

The selection of MANI Ophthalmic Knife by surgeons reveals a spectrum of preferences within ophthalmic surgical practices. While some surgeons adhered to standard configurations for cataract procedures, others demonstrated a preference for more specialized blade types. These variations highlight the individualized nature of surgical techniques and the importance of a diverse instrumentarium to accommodate the unique demands of different surgical scenarios.

The data suggests that while standard ophthalmic knife configurations exist, experienced surgeons often incorporate specialized tools to optimize surgical outcomes. This underscores the dynamic and evolving nature of ophthalmic surgical practices and the necessity for a range of instrument options to meet the diverse needs of the surgical community.

The feedback from surgeons highlights the consistent sharpness of MANI Ophthalmic Knife, thereby reducing tissue trauma and improving patient outcomes. The cultural and technological heritage embedded in these knives, inspired by Japan's meticulous approach to metalworking, has evidently translated into instruments that meet the highest standards of ophthalmic surgery.

Furthermore, the emphasis on quality control, material science and precision engineering sets MANI Ophthalmic Knife apart from its competitors, making these knives a preferred choice among surgeons worldwide. This paper also shed light on the broader implications of adopting high-quality surgical instruments, particularly in resource-limited settings, where the reliability and effectiveness of tools like MANI Ophthalmic Knife can significantly influence surgical success and patient care.

Overall, MANI Ophthalmic Knife represents a convergence of tradition, innovation and clinical excellence, positioning them as a critical component in the future of ophthalmic surgery. As the field continues to evolve, the precision and reliability offered by these ophthalmic knives will likely play an essential role in advancing surgical techniques and improving patient outcomes globally.

## Appendix

Video shared by Dr. Arun Gulani showing the use of MANI Ophthalmic Knife in one of his patients showcasing the symbiosis of technology and technique to result in superior patient outcomes and experience.

Video shared by Dr. Morgan Micheletti, who has performed approximately 30 surgeries using MANI Ophthalmic Knife and has found them to deliver smooth, precise cuts without issues.

## References


1. JOIA History – Japan Ophthalmic Instrument Association [Internet]. [cited 2024 Aug 11]. Available at: https://www.joia.or.jp/en/about-joia/our-history/
2. Japanese Medical Equipment Makers At The Cutting Edge Of Technological Advancement [Internet]. [cited 2024 Aug 14]. Available at: https://www.forbes.com/sites/japan/2020/07/21/japanese-medical-equipment-makers-at-the-cutting-edge-of-technological-advancement/
3. Founding Principles/Policies – Japan Ophthalmic Instrument Association [Internet]. [cited 2024 Aug 11]. Available from: https://www.joia.or.jp/en/about-joia/our-principle/
4. Japanese craft - Wikipedia [Internet]. [cited 2024 Aug 11]. Available from: https://en.wikipedia.org/wiki/Japanese_craft
5. Clive S. Samurai : the weapons and spirit of the Japanese warrior. 20042001;144.
6. Tsuwa H. Ultra-precision machining in Japan. Precis Eng. 1979;1(1):39–43.
7. The Japanese Blade: Technology and Manufacture | Essay | The Metropolitan Museum of Art | Heilbrunn Timeline of Art History [Internet]. [cited 2024 Aug 11]. Available at: https://www.metmuseum.org/toah/hd/japb/hd_japb.htm
8. Naoum P, Palioura S, Naoum V, et al. Cost–benefit analysis of single versus repeated use of single-use devices in cataract surgery. Clin Ophthalmol. 2021;15:1491–1501.
9. Single‐use medical devices: implications and consequences of re‐use. Med Devices Agency Device Bull. 2000;4:1–9.
10. Leslie T, Aitken DA, Barrie T, Kirkness CM. Residual debris as a potential cause of postphaco-emulsification endophthalmitis. Eye. 2003;17(4):506–512.
11. Ophthalmic Instruments｜Product Information｜MANI, INC. [Internet]. [cited 2024 Aug 11]. Available at: https://www.mani.co.jp/en/product/ophthalmic.html
12. Ophthalmic Knife / Ultimate Sharpness /MANI, INC. [Internet]. [cited 2024 Aug 11]. Available at: https://www.mani.co.jp/en/product/opt_us/us/index.html
13. Tanzania | RAAB [Internet]. [cited 2024 Aug 14]. Available at: https://www.raab.world/country-profiles/tanzania



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