Introduction

A case study reporting on the success of the Versius Robotic Assisted Surgery (RAS) programme at Klinikum Chemnitz following the first 400 surgical procedures, summarising the progress of the programme to date, including the implementation and subsequent expansion of the programme. It includes detailed commentary from all departments and teams that have touchpoints with the programme, data reported by Klinikum Chemnitz, data from CMR’s clinical registry as well as Versius system telemetry.

The case study examines the following topics:

- The background and business case for introducing Versius to Klinikum Chemnitz
- Early observations regarding the impact Versius is making at the Patient, Surgeon, Department, Organisation & Population level, with particular focus on the clinical, operational and health economic gains.
- The interdependence across Klinikum Chemnitz and the partnership with CMR that has helped to make the programme a success.
- What has changed and/or improved at Klinikum Chemnitz following the introduction of Versius and how has the programme scaled to date.
Background

Minimal access surgery (MAS) is widely accepted as the preferred approach for soft tissue abdominal surgery, where clinically appropriate.\(^1\) It is also often recognised in national guidelines as preferable for both the patient and the healthcare system.

Despite the widely acknowledged benefits, less than 50% of patients in Europe and the U.S get access to it, with significant socio-economic, geographic and demographic disparities in access.\(^2,3\) These trends are also reflected in Germany, where 1.5M abdominal and thoracic procedures are completed annually. MAS uptake varies by region, from 73% in Berlin, to 64% in Saxony, and nationally, just 31% of colorectal patients are offered MAS.\(^6\)

One of the barriers to the uptake of MAS is thought to be related to the limitations of manual laparoscopic equipment, and the resulting difficulties in both training and performing MAS. RAS is believed to eliminate many of the physical limitations of manual laparoscopic equipment and is therefore often seen as an enabling technology to provide the benefits of MAS to more patients.

Klinikum Chemnitz is tackling this issue head-on for the patients it serves. In 2020, the hospital developed a business case with a vision to become one of the lead centres in the region for the most advanced form of MAS and chose to work with CMR as a commercial partner to help deliver on this vision.

Problem statement

Around 2,600 patients undergo soft tissue surgery in the abdomen and thorax at Chemnitz hospital every year that could be suitable for a MAS procedure.\(^6\) In 2019, around 65% of thoracic patients, and 40% of colorectal patients requiring right hemicolectomy, received open surgery despite the well-established benefits of MAS. Across all procedures, 35% of patients were offered open surgery only.

Figure 1. Chemnitz hospital soft tissue surgery procedure volumes 2019, Data on file
Business case

Key targets & improving patient experience

In 2019, hospitals in Saxony offered minimal access surgery to the lowest percentage of patients nationally, with only 64% of patients offered this approach (figure 2). Every year in Germany, more than 427,000 patients have open surgery for soft tissue disease or functional problems in the abdomen or thorax, despite the widely acknowledged benefits of MAS. (6)

As a major contributor to patient care in Saxony, Klinikum Chemnitz determined that there was scope for converting many surgical procedures to MAS techniques by partnering with CMR on the delivery of a multi-speciality Versius RAS programme, to deliver the benefits of reduced length of stay and improved outcomes and experience for patients.

Patient care

The expected impact on patient care was that for the first time patients would have access, when appropriate, to RAS, and that this could facilitate more patients having access to a minimal access approach who would not have otherwise had it.

The patient benefits of MAS are well acknowledged in medical literature and include reductions in post-operative pain, complications, scarring, and opioid use as well as a shorter length of inpatient stay and faster return to normal activities. (1,12)

For some procedures, a minimal access approach can help preserve normal bodily functions (e.g. bladder, bowel and sexual) which can lead to improved quality of life and treatment satisfaction scores for patients after surgery. (13)

Clinical and disease outcomes associated with MAS are comparable or improved compared to that of open surgery across both oncological and non-oncological indications, including outcomes such as positive surgical margin rates, lymph node yields, overall survival, and hernia recurrence. (23-34)

Figure 2. Open and MAS mix per region of Germany in 2019, Data on file (6)
Workforce recruitment

A recent survey reported that around 15% of surgeons in Germany, and 20% of surgeons in the UK and the U.S, think they may need to retire early due to the physical impact of conducting laparoscopic surgery. Versius RAS offers improved surgeon ergonomics compared to manual laparoscopic surgery and has the potential to extend surgical careers and reduce workplace injury.

It is believed that robotic technology can play a role in avoiding premature retirement, and address the recruitment shortfall in surgery. A Versius RAS programme was also expected to have a positive impact on recruitment and retention of staff.

Making best use of the estate

The size and modular design of Versius allows the system to be easily moved between departments and integrated into existing workflows. Unlike first generation platforms, it can be used in any theatre appropriate for manual laparoscopic work. This allows the hospital to introduce robotic services across multiple specialties without requiring structural modifications to the estate.
Implementation

Service delivery

The growth of the Versius programme is illustrated here (figures 3 & 4). It was initiated with operating teams from both Visceral and Thoracic surgery. A high volume of procedures were undertaken with Versius from month one in Visceral surgery. Cholecystectomy was the main procedure type scheduled during the early learning curve, with the aim of progressing through the learning curve with lower complexity procedures. A lower volume and more graduated utilisation curve is visible in Thoracics.

Klinikum Chemnitz reported a short learning curve for the surgical teams when using Versius, highlighting the usability and versatility of the system.

Figure 3. Procedure mix at Klinikum Chemnitz following first 400 Versius procedures

Figure 4. Klinikum Chemnitz Versius procedure volumes over time, shown monthly and cumulatively
Klinikum Chemnitz has been able to rapidly develop a multi-specialty Versius robotic programme for abdominal surgery, across a range of benign, complex benign and cancer procedures (Figure 5).

Since the surgical robotic system was implemented in April 2021, Versius usage data indicates that Klinikum Chemnitz has been utilising the system well during core theatre hours, scheduling two to three cases per day where possible, (Figure 6). This reflects the modular and portable nature of Versius, which has allowed the system to be easily moved between operating theatres, supporting high utilisation.

<table>
<thead>
<tr>
<th>Surgical Specialty</th>
<th>Versius Procedure</th>
<th>Volume to date</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Cholecystectomy</td>
<td>239</td>
</tr>
<tr>
<td></td>
<td>Appendicectomy</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Repair of other hernia of abdominal wall</td>
<td>2</td>
</tr>
<tr>
<td>Thoracic</td>
<td>Segmentectomy</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Lobectomy</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Thyrectomy</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Sympathectomy</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Mammary Carcinoma</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pleurectomy</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Mediastinal Lymph Node Dissection</td>
<td>1</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Right Hemicolecotomy</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Sigmoid Colectomy</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Abdominoperineal Resection</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Anterior Resection</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Left Hemicolecotomy</td>
<td>2</td>
</tr>
<tr>
<td>Upper G.I.</td>
<td>Subtotal Pancreatectomy</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Oesophagomyotomy</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Oesophagectomy</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Gastroctomy</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Resection of hepatic lesion</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Fundoplication</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pyloroplasty</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Splenectomy</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 5. Klinikum Chemnitz Versius procedures completed by speciality

Figure 6. Klinikum Chemnitz Versius procedure start and end times indicating high utilisation of the system.
“The implementation of the Versius RAS programme has been smooth, well organised and with a high level of support from CMR, our partner. Versius has been a clear contributor to team-building and I believe it has contributed to a highly engaged surgical team at the bedside and an engaging nursing team who look after patients on the ward.

When we first initiated our Versius RAS programme, one major goal was to reach total operative times that were similar to that of manual laparoscopic surgery, and following a period of implementation, I believe we have achieved exactly this in a relatively short amount of time. A high level of consideration for real-world human factors and usability has been given across all components of the Versius system, and the entire surgical team have consequently experienced a short learning curve. This is reflected in our utilisation statistics (Figures 3-5), which shows we were able to conduct a high volume of procedures within the first month of using Versius, undertaking multiple procedures per day where feasible.

We started our programme with low complexity procedures, following a carefully governed introduction. The short learning curve and versatility of the system, enabled us to integrate Versius gradually into our clinical practice, undertaking higher complexity surgery in a stepwise manner over time. Key to this was the versatility afforded to us by the freedom of port placement you get with a small and modular system like Versius. This gives us the flexibility to integrate manual laparoscopic instruments into the procedure as required. In some cases, Versius is enabling us to offer patients an MAS approach rather than a large open incision, most notably for our colorectal patients.

Prior to Versius, 40% of our colorectal cases for right hemicolectomy were performed with an open approach. 18-months into our Versius programme, the number of patients receiving open surgery has dropped to 25%. We are also seeing many of our Versius RAS patients typically discharged from hospital one night earlier, compared to patients who have received manual laparoscopy. Whilst we have not formally validated this finding, it is an interesting anecdotal observation that requires further investigation. Over time, we hope that many more patients can be offered a MAS procedure with Versius, bringing with it well documented benefits such as reduced complications, faster recovery, less pain and improved cosmesis. Alongside the introduction of Versius, the German Cancer Society provided us with certification to expand our oncologic programme, and I expect we will soon be offering a wider range of surgical interventions for patients; for example, those requiring liver surgery.

Prof. Dr. Lutz Mirow
Head Physician | Department of General and Visceral Surgery

“Implementation

Prior to Versius, 40% of our colorectal cases for right hemicolectomy were performed with an open approach. 18-months into our Versius programme, the number of patients receiving open surgery has dropped to 25%...”
Versius has enabled me to offer all the benefits of minimal access surgery to a much greater proportion of my patients...
Another finding consistent with the reported literature in RAS, (38-41) is that when compared to manual laparoscopy, we are observing fewer conversions from MAS to open surgery when we use Versius to perform RAS – we find that the enhanced dexterity, 3D vision and ergonomic console contributes to this, as well as the versatility of port placement, which is akin to the triangulation we typically use in manual laparoscopy. This enables us to quickly switch to and from manual laparoscopy, and in many cases, avoid a conversion to open surgery.

Compared with manual laparoscopic surgery, patients treated with Versius are typically discharged from hospital one night earlier....

On ergonomics, the open Versius console allows you to sit or stand whilst operating, helping the surgeon to retain a neutral neck and spine position. We really like this option, and in fact many of our operations are conducted in the standing position. This unique feature of Versius really comes into its own during complex colorectal procedures, which can require a long operating time. I expect this will have a positive medium to long term impact, potentially extending my working career as a surgeon.

When choosing a commercial partner to deliver a RAS programme, we considered heavily the need for versatility. No major construction work was required to implement the programme and Versius can easily be moved between specialties within the operating department. Utilisation of the system has therefore not been limited by the footprint, manoeuvrability or commitment of the entire system to one operating room, enabling high utilisation, scalability and value for money.
Dr. Sven Seifert

Head Physician | Clinic for Thoracic, Vascular & Endovascular Surgery

“Thoracic surgeons have been waiting for a RAS system suited for work between the ribcage for some time. For us, the ideal system needs to bring the benefits of RAS, with the dimensions of the instruments used in manual thoracoscopic surgery. Our early experience is that Versius fits this exact criteria.

As the first Thoracic clinic globally to use Versius, we were naturally keen to ensure we moved through the learning curve in a stepwise and responsible way. Fortunately, there has been a low barrier to integrating Versius into our practice, particularly because it can be used with standard laparoscopic ports, in a configuration that helps us approach the target anatomy in a flexible way. The learning curve has therefore been shorter and steeper than we originally anticipated. After defining the surgical teams that would be using Versius, we undertook a training programme working closely with CMR, who were wonderfully engaging, and provided a stepwise approach to learning including virtual, dry lab and wet lab training.

We initiated our programme in partnership with CMR’s implementation team, starting with low complexity resections, moving to thymectomies, then mediastinal tumours through to lobectomies across every lobe of the lung, using just 3 of the Versius bedside units. We also took the time to develop our idea of the ideal position of the bedside units and ports to optimise reach for each operation. This proved to be relatively easy and we were able to move to complex operations quickly, around 20 days after the first operation.

The system was quickly accepted by the whole surgical team, including our anaesthetists and nurses. I think that good consideration for human factors in the design decisions have led to this. One particular thing I like is having all of the controls in my hand, which seem to be easier to use than having a combination of hands and feet. You have an operating experience that is the same as we had previously, open console and communication with the team. You always feel in control but have the context of the operation in your peripheral vision.

While there are certain situations where we are still not able to offer MAS, following the introduction of Versius, 50% of our Thoracic patients are now offered MAS, compared to 35% previously. Thymectomies are a good example – they are difficult to do with manual thoracoscopic instruments which only offer limited degrees of freedom, and open surgery involves splitting the sternum which is highly invasive and has a much longer recovery. We also have changed from single port surgery to Versius RAS when performing lobectomies & lymphadenectomies, which has helped us to standardise our approach across more procedures. Our conversion rates to open are also marginally lower in Thoracic surgery with Versius.

Mediastinal surgery has also been made much easier to do with Versius thanks to the 3D HD vision and small diameter wristed instruments. Previously we only undertook 4-5 of these procedures per year, and now it’s around 40 per year. For many years, one centre in all of Germany (Berlin) accepted referrals for tumours of the thymus. Patients can now also be referred here, which is one important step towards providing equity of access to care in Germany.

For patients with tumours of the thymus, they can now be referred for surgery here in Chemnitz, which is one important step in providing egalitity of care in Germany...
An interesting anecdotal observation we have made is that patients seem to be experiencing lower levels of pain following surgery with Versius. In Thoracic surgery, we think this could be due to the virtual pivot point that Versius uses to define and move through the port. We suspect there is lower lateral traction placed on the chest wall when compared to manual approaches. Although speculative at this stage, it’s a really interesting observation and we hope that further research will help us to understand this positive phenomenon.

Versius has raised the profile of the hospital, regionally and nationally, and has created a lot of interest from patients who ask if the robotic approach is suited for their needs, and it has been transformative for staff engagement within the department.

The design of Versius will likely allow for the programme to expand to more procedures and specialties quickly. It is small and modular, and can move from operating room to another easily, as well as being able to work in smaller operating rooms. The choice of being able to use as many arms as you need in terms of cost and versatility is a great option to have, particularly as the programme scales up and we build a working fleet of Versius systems. Given that the bedside units can be shared between systems, if we expand our Versius programme, perhaps the next system we procure won’t need all four bedside units.”

Following the introduction of Versius, 50% of our Thoracic patients are now offered MAS, prior to Versius, it was just 35%...
Outcomes

Results

Patient outcomes from the first 175 visceral surgery procedures at Klinikum Chemnitz have recently been published as a case series in Surgical Endoscopy. All patients undergoing visceral surgery with Versius provided informed consent for the procedure and for use of their pseudo anonymised data to be recorded in the CMR registry.

Data collection was performed prospectively from the start of the robotic surgical programme. Here is a summary of the results, as reported in the case series:

One hundred and seventy five patients received robotic surgery with the Versius system (table 1). 100 female and 75 male patients received surgical treatment. Mean age was 55.6 years (range 16–87 years), the mean Body Mass Index was 25.8 kg/m² (range 17–47 kg/m²). To assist with the learning curve associated with the Versius system, a large cohort of patients requiring cholecystectomy (n = 130) were selected for treatment.

### Table 1 Intra- and perioperative data

<table>
<thead>
<tr>
<th>Procedure</th>
<th>n</th>
<th>Median age (years)</th>
<th>Median BMI (kg/m²)</th>
<th>Median total operative time (min)</th>
<th>Median Blood loss (ml)</th>
<th>Median Hospital stay (days)</th>
<th>Major Complication (&gt;1 = grade 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholecystectomy</td>
<td>130</td>
<td>53,49 IQR = 30</td>
<td>27,85 IQR = 7</td>
<td>82 IQR = 33</td>
<td>10 IQR = 33</td>
<td>3 IQR = 2</td>
<td>Secondary haemorrhage (n = 1)</td>
</tr>
<tr>
<td>Appendectomy</td>
<td>3</td>
<td>52</td>
<td>23,3</td>
<td>72 IQR = 13</td>
<td>200 IQR = 6</td>
<td>6 IQR = 2</td>
<td>Secondary haemorrhage (n = 1)</td>
</tr>
<tr>
<td>Gastrectomy</td>
<td>3</td>
<td>56</td>
<td>24,49</td>
<td>370 IQR = 13</td>
<td>200 IQR = 13</td>
<td>13 IQR = 6</td>
<td>None</td>
</tr>
<tr>
<td>Heller-myotomy</td>
<td>1</td>
<td>34</td>
<td>26</td>
<td>135 IQR = 13</td>
<td>0 IQR = 6</td>
<td>6 IQR = 6</td>
<td>None</td>
</tr>
<tr>
<td>Right sided colectomy</td>
<td>11</td>
<td>69</td>
<td>27,7</td>
<td>178 IQR = 13</td>
<td>125 IQR = 10</td>
<td>Secondary haemorrhage (n = 1)</td>
<td></td>
</tr>
<tr>
<td>Gastric Fundoplication</td>
<td>1</td>
<td>46</td>
<td>36</td>
<td>262 IQR = 20,3</td>
<td>50 IQR = 5</td>
<td>5 IQR = 5</td>
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</tr>
<tr>
<td>Cardiomyotomy</td>
<td>1</td>
<td>81</td>
<td>23,3</td>
<td>104 IQR = 13</td>
<td>0 IQR = 6</td>
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<tr>
<td>Cystectomy liver</td>
<td>2</td>
<td>68</td>
<td>17,4</td>
<td>73 IQR = 12</td>
<td>0 IQR = 10</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Esopagectomy</td>
<td>5</td>
<td>72</td>
<td>25,8</td>
<td>454 IQR = 13</td>
<td>600 IQR = 22</td>
<td>Anastomotic leak (n = 1)</td>
<td></td>
</tr>
<tr>
<td>Left sided pancreat-</td>
<td>1</td>
<td>72</td>
<td>25,4</td>
<td>178 IQR = 13</td>
<td>800 IQR = 13</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Pyloroplastic</td>
<td>1</td>
<td>67</td>
<td>26,3</td>
<td>172 IQR = 13</td>
<td>20 IQR = 13</td>
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<td>None</td>
</tr>
<tr>
<td>Splenectomy</td>
<td>1</td>
<td>61</td>
<td>28</td>
<td>185 IQR = 13</td>
<td>50 IQR = 5</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Low anterior resection</td>
<td>13</td>
<td>63</td>
<td>27,4</td>
<td>214 IQR = 16</td>
<td>100 IQR = 9</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Pancreatectomy</td>
<td>2</td>
<td>65,5</td>
<td>27,1</td>
<td>416 IQR = 84</td>
<td>250 IQR = 24</td>
<td>Secondary haemorrhage (n = 1)</td>
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</table>
More complex operations were scheduled over time, such as right sided colectomy (n = 11), low anterior resection (n = 10), pulmonary lobectomy (n = 13), gastrectomy (n = 3), resection of the distal oesophagus (n = 5) and two pancreatectomies. Table 1 illustrates the intra- and perioperative data.

Total hospital stay observed for minor and major resections was similar to that observed in manual laparoscopic procedures. In most cases, the stay was one or two days less. Furthermore, a fast recovery from surgery was also observed. Postoperative paralysis occurred less frequently than in manual laparoscopic or open surgery. The mean time for return of bowel movement after colorectal surgery was 3.6 days (range 1–6 days).

All oncological resections were R0 with a sufficient safety distance to the tumour. With respect to colorectal surgery, particular attention was paid to prepare an intact mesorectal/mesocolic plane to ensure the quality of the pathological specimen. All colorectal preparations had MERCURY-GRADE 1.

As the teams progressed through the learning curve, there was an improvement of total operative time (figure 7).
Complications

Of the 175 patients, four patients had to be revised because of secondary bleeding. One patient underwent surgical treatment for appendectomy. Intraoperative observations indicated a perityphlilitic abscess and diffuse bleeding. The patient had to be revised two days later because of secondary haemorrhage.

In one of the cholecystectomies, the patient experienced diffuse liver bleeding that had to be managed following the operation. Similar to this case, two other cases (right sided colectomy and pancreatic resection) were revised because of diffuse bleeding (Table 2).

<table>
<thead>
<tr>
<th>Complication</th>
<th>n</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary haemorrhage</td>
<td>4</td>
<td>Operation</td>
</tr>
<tr>
<td>Anastomotic leak</td>
<td>1</td>
<td>Endoscopic therapy</td>
</tr>
</tbody>
</table>
Klinikum Chemnitz has been able to implement and expand a robotic assisted surgery programme with Versius across multiple specialties with limited prior surgeon experience in robotic surgery.

This is the largest case series of RAS operations using the Versius system in Europe at the time of submission. This series highlights the versatile use of the new Versius robotic system and demonstrates that performing minor and major surgical interventions with the Versius system are safe and feasible.

The teams were able to undertake a range of procedures from cholecystectomy, to colorectal surgery, upper-gastrointestinal surgery as well as thoracic surgery. The 3D HD vision provided high clarity and optical magnification, wristed instruments, tremor filtration and an independent operator-navigated camera tool are distinct advantages over conventional laparoscopy and can make challenging surgical cases (e.g. when operating in small spaces such as the pelvis) easier to perform. In addition, the open console design allows for much better communication between lead surgeon and the entire surgical team.

The oncological outcomes as well as the complication rates observed, seem to be similar to conventional laparoscopic or open surgery, though a comparative study is required to validate this observation.

With consideration for the procedure complexity, extent of resection, and surgeon’s experience, the Versius system seems to be a promising alternative to manual MAS. The low rate of morbidity and the comfortable posture during surgery are advantages. As expected, during implementation of the system, total operative time was lengthened compared to laparoscopic approach, but this difference is diminishing as the teams move through the learning curve.

Four patients needed revision surgery because of secondary haemorrhage. The bleeding was diffuse. We noticed the difficulty of coagulation firstly during flexure mobilization and opening the Lesser sac as well as performing total mesorectal excision (TME). There are opportunities for development of the current instrument range for intraoperative dissection and coagulation, at this time, a bipolar Maryland and a diathermy hook are available.

While there are opportunities for iterative development, the Versius system seems to be a good, promising system and a safe alternative to other robotic systems. The open console design facilitates good communication between console surgeon and bedside assistant, and the mobile bedside units are small, modular, portable and versatile.
Summary

The Klinikum Chemnitz case study demonstrates that Versius can be used safely across multiple surgical specialties, in a complex patient population. Use of the system is feasible for Visceral and Thoracic surgical procedures, and scaling up of operative volumes is achievable. The clinical outcomes illustrate those experienced by a centre at initiation of a robotic surgical programme, and are in keeping with existing modalities and robotic platforms.\(^{(15)}\)

Versius, has enabled the surgeons at Klinikum Chemnitz to offer MAS to more patients, who are able to recover and return home to normal life more quickly.\(^{(35)}\) Following the initiation of the Versius RAS programme, the percentage of colorectal patients offered MAS for right hemicolectomy has increased from 60% to 75%, and in Thoracic surgery, it has increased from 35% to 50%. Mediastinal surgery is now being offered at Klinikum Chemnitz, providing an alternative second location in Germany for this procedure, expanding equity of access to MAS for patients in Germany.

A lower rate of conversion to open surgery vs manual approaches has also been reported, as well as a reduction in post-operative pain for patients who have a Versius procedure – though further comparative data analysis would be needed to validate these anecdotal observations.

Scaling the Klinikum Chemnitz experience with Versius in hospitals around the world has the potential to bring MAS to all those who need it, and showcases the potential for Versius to offer health-economic value to health systems as they commission RAS more widely.
About Klinikum Chemnitz gGmbH

Klinikum Chemnitz gGmbH (KC) is 100 percent owned by the City of Chemnitz and emerged in 1994 from the Städtische Kliniken Chemnitz. The historical roots of the company go back to the 14th century, in particular the hospital in front of the city gates, which is mentioned in documents around 1350, and the hospital St. George, which is mentioned in a source from 1395.

In 2020, around 62,000 patients were treated as in-patients and part-time in-patients and around 80,000 out-patients at Chemnitz Clinic. Around 7,000 people are currently employed at the Chemnitz Clinic and in the subsidiaries and affiliated companies. In 2020, the Klinikum Chemnitz Group achieved annual sales of around €550 million.

About CMR Surgical Ltd.

CMR is a global medical devices company dedicated to transforming surgery with Versius®, a next-generation surgical robot. Headquartered in Cambridge, United Kingdom, CMR is committed to working with surgeons, surgical teams and hospital partners, to provide an optimal tool to make robotic minimal access surgery universally accessible and affordable. With Versius, we are on a mission to redefine the surgical robotics market with practical, innovative technology and data that can improve surgical care.

Founded in 2014, CMR is private limited company backed by an international shareholder base.

The Versius® surgical robotic system

Versius® resets expectations of robotic surgery. Versius fits into virtually any operating room set-up and integrates seamlessly into existing workflows, increasing the likelihood of robotic minimal access surgery (MAS). The portable and modular design of Versius allows the surgeon to only use the number of arms needed for a given procedure. Biomimicking the human arm, Versius gives surgeons the choice of optimised port placement alongside the dexterity and accuracy of small fully-wristed instruments.

With 3D HD vision, easy-to adopt instrument control and a choice of ergonomic working positions, the open surgeon console has the potential to reduce stress and fatigue and allows for clear communication with the surgical team. By thinking laparoscopically and operating robotically with Versius, patients, surgeons and healthcare professionals can all benefit from the value that robotic MAS brings. But it’s more than just a robot.

Versius captures meaningful data with its wider digital ecosystem to support a surgeon’s continuous learning. Through the Versius Connect app, Versius Trainer and the CMR clinical registry, Versius unleashes a wealth of insights to ultimately improve surgical care.
References

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