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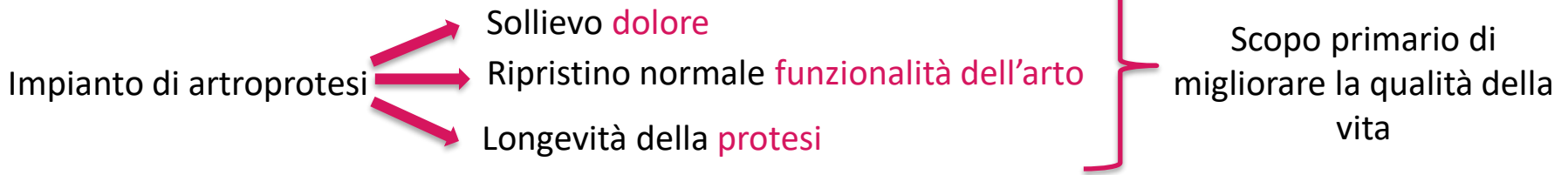
SIMPOSIO SIOT/RIAP/GLOBE – EVIDENZE SCIENTIFICHE IN CHIRURGIA ROBOTICA: RCT vs REGISTRI

Registri protesici: dati internazionali sulla Robotica

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Registri protesici: dati internazionali sulla Robotica



Utilizzo della **chirurgia robotica**

Australia domina la scena mondiale [1].

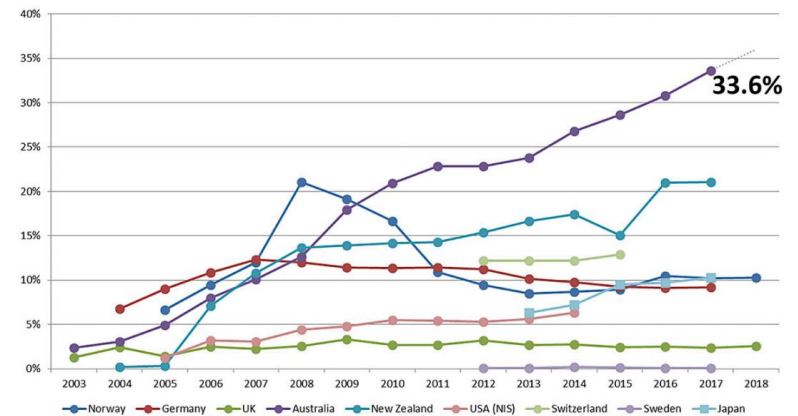


Fig. 1
 The percent of arthroplasties performed using computer navigation from 2003 to 2018 (as per each country's national joint registry annual report). NIS = National Inpatient Sample. (Reproduced, with permission of Dr. Martin A. Bauer, from Brainlab AG.)

[1] Hazratwala, K., Brereton, S. G., Grant, A., & Dlaska, C. E. (2020). Computer-Assisted Technologies in Arthroplasty: Navigating Your Way Today. *JBJS reviews*, 8(3), e0157. <https://doi.org/10.2106/JBJS.RVW.19.00157>

Risultati [2]

US

| utilizzo | 2005 | 2014 |
|---------------------|------|------|
| Computer navigation | 1.2% | 6.3% |
| technology assisted | 1.2% | 7% |

Registro Novergese

| Follow up (8 anni) | CAS | CONV |
|--------------------|------|------|
| | 5.1% | 4.2% |
| <65 | 6.4% | 7.3% |

Registro Neozelandese

| Tasso di revisione | CAS | CONV |
|--------------------|------|------|
| <65 (5 anni) | 3% | 2.9% |
| <65 (10 anni) | 4.4% | 4.9% |

| Registro Neozelandese | N° | CAS | CONV |
|-----------------------|--------|--------|------|
| TKA | 20.000 | 10.404 | 8817 |

Registro Australiano

| utilizzo | 2002 | 2018 |
|----------|------|------|
| TKA | 2.4% | 33% |

| | |
|----------------------|---------|
| n° TKA (report 2019) | 132.211 |
|----------------------|---------|

| Tasso revisione (3 anni) | non robotic | robotic |
|--------------------------|-------------|---------|
| UKR | 4.6% | 2.8% |

| Tasso revisione (10 anni) | CAS | CONV |
|---------------------------|------|------|
| <65 | 6.9% | 7.8% |

| Tasso revisione (15 anni) | CAS | CONV |
|---------------------------|-------|------|
| TKA | 7.1% | 7.4% |
| TKA >65 | 5.4% | 5.2% |
| TKA <65 | 11.2% | 9.7% |

L'accuratezza della chirurgia robotica rispetto al metodo tradizionale non è ancora dimostrata. C'è necessità di effettuare studi di **coorte su larga scala** che abbiano il giusto potere di dimostrare questa differenza. Per questo, i **registri nazionali di artroprotesi** possono giocare un ruolo fondamentale.

[2] J. Shatrov, D. Parker «Computer and robotic- assisted total knee arthroplasty: a review of outcomes», Journal of Experimental Orthopaedics, (2020) 7:70

Dati da Report

Variables, response rate 2016–2020

Svezia

| | 2016 | 2017 | 2018 | 2019 | 2020 |
|---------------------|------|------|------|------|------|
| Navigation (CAS), % | 100 | 100 | 100 | 100 | 100 |

Computernavigation

Table 32: Primary operations - Total knee prostheses

| Year | Yes | No | Missing | Total |
|---------|-----------|-------------|-----------|-------|
| 2020 | 480 (8%) | 4 779 (84%) | 412 (7%) | 5 671 |
| 2019 | 514 (8%) | 5 203 (85%) | 433 (7%) | 6 150 |
| 2018 | 597 (10%) | 4 785 (82%) | 449 (8%) | 5 831 |
| 2017 | 569 (10%) | 4 515 (81%) | 516 (9%) | 5 600 |
| 2016 | 584 (11%) | 4 413 (80%) | 553 (10%) | 5 550 |
| 2015 | 475 (9%) | 4 167 (79%) | 652 (12%) | 5 294 |
| 2014 | 443 (9%) | 3 883 (78%) | 648 (13%) | 4 974 |
| 2013 | 390 (9%) | 3 404 (75%) | 723 (16%) | 4 517 |
| 2012 | 416 (9%) | 3 292 (75%) | 682 (16%) | 4 390 |
| 2011 | 445 (11%) | 3 170 (78%) | 447 (11%) | 4 062 |
| 2010 | 659 (17%) | 3 101 (79%) | 185 (5%) | 3 945 |
| 2009 | 762 (19%) | 3 064 (77%) | 160 (4%) | 3 986 |
| 2008 | 742 (21%) | 2 640 (75%) | 144 (4%) | 3 526 |
| 2005-07 | 813 (9%) | 7 278 (85%) | 500 (6%) | 8 591 |

Table 33: Primary operations - Unicondylar knee prostheses

| Year | Yes | No | Missing | Total |
|---------|---------|-------------|----------|-------|
| 2020 | 2 (0%) | 801 (97%) | 26 (3%) | 829 |
| 2019 | 0 | 920 (93%) | 64 (7%) | 984 |
| 2018 | 1 (0%) | 961 (96%) | 38 (4%) | 1 000 |
| 2017 | 0 | 810 (93%) | 58 (7%) | 868 |
| 2016 | 0 | 800 (93%) | 63 (7%) | 863 |
| 2015 | 4 (1%) | 681 (90%) | 68 (9%) | 753 |
| 2014 | 0 | 519 (86%) | 87 (14%) | 606 |
| 2013 | 0 | 389 (82%) | 88 (18%) | 477 |
| 2012 | 0 | 419 (88%) | 56 (12%) | 475 |
| 2011 | 1 (0%) | 387 (88%) | 51 (12%) | 439 |
| 2010 | 7 (2%) | 394 (95%) | 13 (3%) | 414 |
| 2009 | 3 (1%) | 452 (98%) | 8 (2%) | 463 |
| 2008 | 15 (3%) | 416 (95%) | 9 (2%) | 440 |
| 2005-07 | 21 (2%) | 1 231 (93%) | 69 (5%) | 1 321 |

Registration of CAOS started in 2005

Norvegia

Dati da Report

Svizzera

Table 6.7
Primary total knee arthroplasty: Technologies used

All diagnoses, Multiple

| Technology | N (2015-2020) | N | % |
|--------------------|----------------------------------|--------|------|
| Conventional | Conventional | 11,131 | 68.8 |
| Computer/NAV | Minimally invasive | 3,943 | 24.4 |
| PSI | Patient specific instrumentation | 790 | 4.9 |
| Minimally invasive | Computer assisted | 319 | 2.0 |
| Other technologies | Other | 361 | 2.2 |

Figure 6.5
Primary total knee arthroplasty: Percentage per year

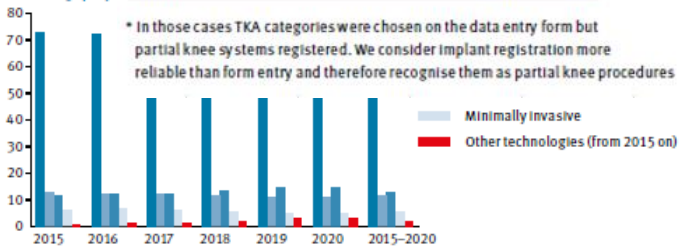
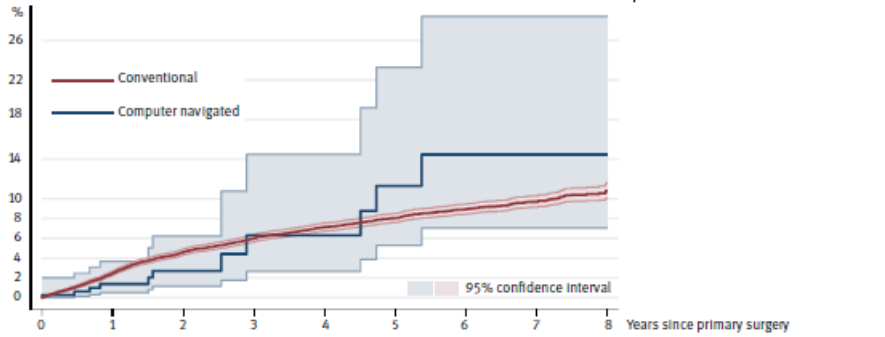


Table 6.4
Primary total knee arthroplasty: Surgery characteristics all diagnoses

| |
|------|
| 20 |
| 15,3 |
| 70 |
| 10 |
| 14 |
| 5 |
| 1 |
| 1 |

Figure 7.6
Estimated failure rates of primary partial knee arthroplasty: conventional vs. computer navigated



| Cumulative rev. rates | 1 year | 2 years | 3 years | 4 years | 5 years | 6 years | 7 years | 8 years |
|-----------------------|---------------|---------------|----------------|----------------|-----------------|-----------------|-----------------|------------------|
| Conventional | 2.5 (2.3-2.7) | 4.6 (4.3-4.9) | 6.0 (5.6-6.3) | 7.1 (6.7-7.6) | 8.1 (7.6-8.5) | 8.9 (8.4-9.5) | 9.7 (9.1-10.3) | 10.8 (10.1-11.6) |
| Computer nav. | 1.4 (0.5-3.7) | 2.7 (1.2-6.2) | 6.3 (2.7-14.5) | 6.3 (2.7-14.5) | 11.3 (5.3-23.3) | 14.5 (7.0-28.4) | 14.5 (7.0-28.4) | |

| | | |
|----------------------------------|-----|-----|
| Patient specific instrumentation | 84 | 0.8 |
| Minimally invasive | 273 | 2.6 |
| Other | 94 | 0.9 |

* Includes a small proportion of reoperations that are not counted as component revisions in the evaluative parts of this report
 ** Entered as „other“ intervention and then recoded. As of form version 2021, SIRIS lists Medial Pivot as a separate main category

Dati da Report

Australia

Figure KT55 Cumulative Percent Revision of Primary Total Knee Replacement Since 2017 by Robotic Assistance and Age (Primary Diagnosis OA)

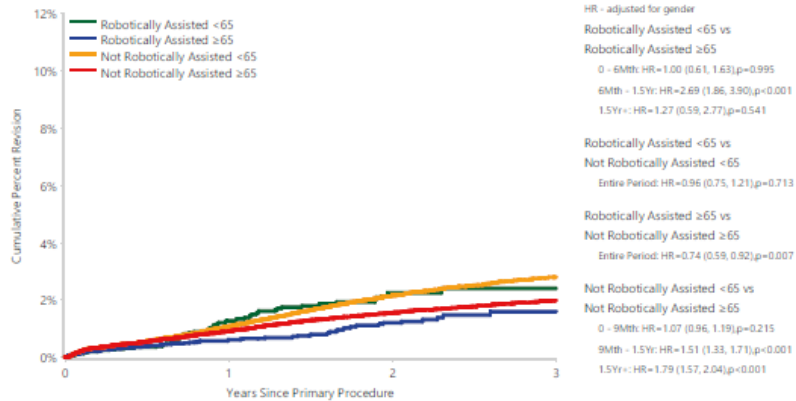
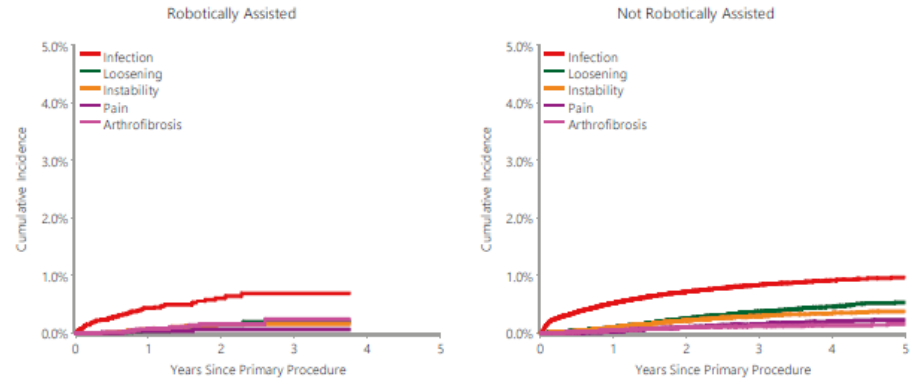


Figure KT54 Cumulative Incidence Revision Diagnosis of Primary Total Knee Replacement Since 2017 by Robotic Assistance (Primary Diagnosis OA)

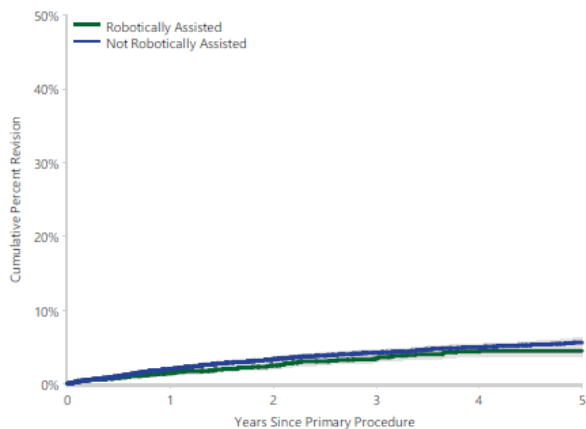


Note: Restricted to modern prostheses

Dati da Report

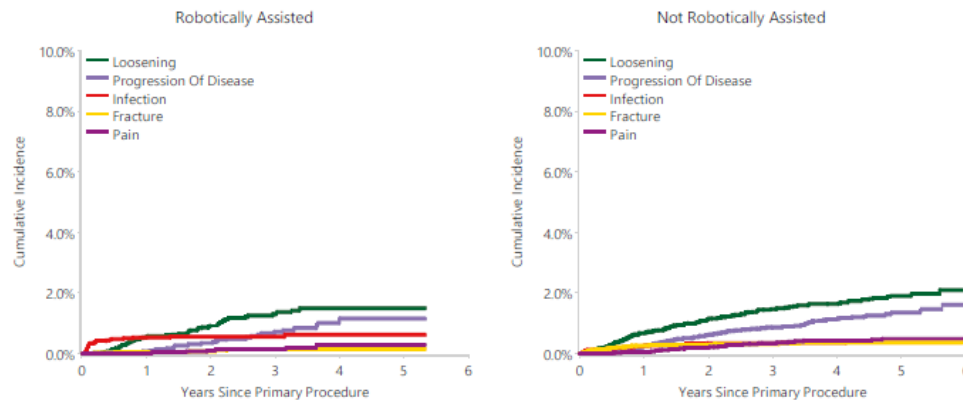
Australia

Figure KP10 Cumulative Percent Revision of Primary Unicompartamental Knee Replacement since 2015 by Robotic Assistance (Primary Diagnosis OA)



HR - adjusted for age and gender
 Not Robotically Assisted vs
 Robotically Assisted
 Entire Period: HR=1.23 (1.03, 1.48), p=0.025

Figure KP11 Cumulative Incidence Revision Diagnosis of Primary Unicompartamental Knee Replacement Since 2015 by Robotic Assistance (Primary Diagnosis OA)



Note: Restricted to modern prostheses

Conclusioni

- Australia domina la scena internazionale (33.6%)
- Più diffusa la chirurgia robotica per le protesi totali di ginocchio
- Nei report annuali non è sempre presente
- Difficoltà nel reperire le informazioni

Grazie dell'attenzione!

Il lavoro è stato realizzato nell'ambito del Registro Italiano ArtoProtesi (RIAP) e del Registro Italiano delle Protesi Impiantabili (RIPI) coordinati dall'Istituto Superiore di Sanità e realizzati grazie al contributo assicurato dal Ministero della Salute, Direzione Generale dei Dispositivi Medici e del Servizio Farmaceutico