measure. The granularity of the comorbidities was insufficient, as many registers coded, for example, diabetes mellitus without any extra information.

Registry	ATTRA	BIOBADASER	BSRBR-RA	RABBIT	SCQM
Country	Czechia	Spain	United Kingdom	Germany	Switzerland
Number of Participants	2334	3012	25179	13652	10281
Gender					
Female	1808 (77%)	2372 (79%)	18995 (75%)	10191 (75%)	7584 (74%)
Male	526 (23%)	640 (21%)	6184 (25%)	3461 (25%)	2697 (26%)
Age at observation start date	59 (52, 66)	56 (47, 63)	58 (49, 66)	58 (50, 67)	57 (47, 66)
First observation start date	Feb-2002	Oct-1999	Oct-2001	Aug-2006	March-1995
Number of comorbidities	1 (1, 2)	1 (0, 2)	1 (0, 2)	2 (1, 3)	2 (1, 4)
Disorder of cardiovascular system	1609 (69%)	208 (7%)	2239 (9%)	6330 (46%)	3969 (39%)
Diabetes mellitus	331 (14%)	273 (9%)	1770 (7%)	1591 (12%)	792 (8%)
Depressive Disorder	165 (7%)	0	4971 (20%)	1023 (7%)	1337 (13%)
Disorder of respiratory system	215 (9%)	209 (7%)	4125 (16%)	1282 (9%)	1630 (16%)

Conclusion: This is the first analysis of data from the newly mapped OMOP CDM across five European registers. Through mapping the registers into a CDM, and using the same script, the ability to undertake collaborative analysis without sharing patient level data outside of the country can be realised. Due to differences in study design and data capture, there needs to be a focus on harmonising the coding and analysing of the comorbidities and drugs across registries.

Disclosure of Interests: Lianne Kearsley-Fleet: None declared, Kimme Hyrich: None declared, Martin Schaefer: None declared, Doreen Huschek: None declared, Anja Strangfeld: None declared, Jakub Zavada Speakers bureau: Abbvie, Eli-Lilly, UCB, Sanofi., Consultant of: Abbvie, UCB, Sanofi, Gilead., Markéta Lagová: None declared, Delphine Courvoisier Speakers bureau: Medtalks Switzerland, Christoph Tellenbach: None declared, Kim Lauper Speakers bureau: Medtalks Switzerland, Carlos Sánchez-Piedra: None declared, Nuria Montero: None declared, Jesús-Tomás Sánchez-Costa: None declared, Daniel Prieto-Alhambra Consultant of: Amgen (speaker fees and advisory board membership fees paid to DPA's department) and UCB (consultancy fees paid to DPA's department), Grant/research support from: grants and other from AMGEN, grants, non-financial support and other from UCB Biopharma, grants from Les Laboratoires Servier, outside the submitted work., Edward Burn: None declared
DOI: 10.1136/annrheumdis-2021-eular.888

Bone & Joints

OP0106 THE ASSOCIATIONS BETWEEN BARIATRIC SURGERY AND HIP OR KNEE ARTHROPLASTY, AND HIP OR KNEE OSTEOARTHRITIS: A COHORT STUDY FROM SWEDISH NATIONWIDE HEALTHCARE REGISTRIES

T. Burkard¹, D. Holmberg², T. Hügler³, A. M. Burden^{1,4}. ¹ETH Zurich, Department of Chemistry and Applied Biosciences, Zurich, Switzerland; ²Karolinska University Hospital, Department of Molecular medicine and Surgery, Stockholm, Sweden; ³Lausanne University Hospital (CHUV) and University Lausanne, Department of Rheumatology, Lausanne, Switzerland; ⁴Maastricht University Medical Center+, Department of Clinical Pharmacy and Toxicology, Maastricht, Netherlands

Background: Osteoarthritis (OA) is a slowly developing chronic joint disease mainly characterized by joint pain which may lead to physical disability. OA in weight bearing joints, such as the hip and knee, was suggested to be susceptible to high body weight. In end-stage disease, hip and knee OA are often treated with arthroplasty. The impact of weight loss among obese patients on hip and knee arthroplasty has not been assessed to date.

Objectives: To assess the association between bariatric surgery and hip or knee arthroplasty. As a secondary aim, we assessed the association between bariatric surgery and hip or knee OA in a secondary care setting.

Methods: We performed a propensity score (PS)-matched cohort study using data from Swedish nationwide healthcare registries (patient registry [secondary care], causes of death registry, prescribed drug registry). Patients aged 18-79 years who underwent bariatric surgery between 2006 and 2019 were matched to up to 2 obese bariatric surgery free patients (called unexposed patients) based on their PS. PS-matching was carried out in risk set sampling to reduce selection bias, within 4 sequential cohort entry blocks to account for time trend biases. The primary outcome was hip or knee arthroplasty. The secondary outcome was a diagnosis of hip or knee OA in secondary care. We excluded patients with differential indications for

arthroplasty or OA (e.g. rheumatoid arthritis, septic arthritis). After a 1-year run-in period, patients were followed in an "as-treated" approach until the outcome or censoring due to onset of an exclusion criterion, change of exposure status, or end of study period. We applied Cox proportional hazard regression to calculate hazard ratios (HR) with 95% confidence intervals (CIs) of hip or knee arthroplasty, and separately of hip or knee OA, among bariatric surgery patients when compared to obese unexposed patients. Additionally, we performed analyses in subgroups of age, sex, joint location, bariatric surgery type, and by duration of follow-up.

Results: A total of 39 392 bariatric surgery patients were PS-matched to 61 085 obese unexposed patients. The study population had a mean age of 42 years, a mean follow-up of 6.5 years, and 72.5% of patients were women. We observed 1138 and 1108 hip or knee arthroplasties among bariatric surgery and obese unexposed patients, respectively. We observed an overall increased risk of hip or knee arthroplasty among bariatric surgery patients (HR of 1.43, 95% CI 1.32-1.55), compared to obese unexposed patients. The risk for knee arthroplasty was higher than that for hip arthroplasty among bariatric surgery patients (HR of 1.58, 95% CI 1.42-1.76, and HR of 1.21, 95% CI 1.06-1.39, respectively). Patients who underwent combined mal-absorptive and restrictive bariatric surgery yielded highest risks of hip or knee arthroplasty (HR of 3.58, 95% CI 1.34-9.54). Risks of hip or knee arthroplasty decreased with duration of follow-up (highest risks 1-3 years post-bariatric surgery, HR of 1.79, 95% CI 1.56-2.07). In secondary analyses, risks of secondary care hip or knee OA were decreased among bariatric surgery versus obese unexposed patients (HR of 0.84, 95% CI 0.79-0.90). We observed lower risks for knee OA (HR of 0.82, 95% CI 0.76-0.88) than for hip OA (HR of 0.90, 95% CI 0.79-1.01) and observed lowest risks of hip or knee OA in early follow-up (1-3 years post-bariatric surgery) with a HR of 0.79, 95% CI 0.71-0.88, stable thereafter at a HR of 0.87, 95% CI 0.78-0.97.

Conclusion: Our results suggest that substantial weight loss among obese patients is associated with decreased risks of secondary care hip and knee OA. Increased risks of hip and knee arthroplasty after bariatric surgery are likely the result of increased operability of patients who have lost a substantial amount of excess body weight. Stronger associations for the knee than for the hip in both arthroplasty and OA are consistent with existing literature suggesting a stronger impact of body weight on knee than on hip joints.

Acknowledgements: We thank Prof. Dr. Jesper Lagergren (Karolinska Institutet, Stockholm, Sweden) for hosting Dr. Theresa Burkard for a research stay at the Upper Gastrointestinal Surgery Group and making the data available for use. Furthermore, we thank Dr. Giola Santoni (Karolinska Institutet, Stockholm, Sweden) for her technical support.

Disclosure of Interests: Theresa Burkard: None declared, Dag Holmberg: None declared, Thomas Hügler Consultant of: Pfizer, Abbvie, Novartis, Grant/research support from: GSK, Jansen, Pfizer, Abbvie, Novartis, Roche, MSD, Sanofi, BMS, Eli Lilly, UCB, Andrea Michelle Burden: None declared
DOI: 10.1136/annrheumdis-2021-eular.3974

OP0107 CLINICAL EFFICACY OF ROMOSUZUMAB IN PATIENTS WITH RHEUMATOID ARTHRITIS FOR 12 MONTHS

Y. Kanayama¹, R. Sugimoto². ¹Toyota Kosei Hospital, Orthopedic surgery and Rheumatology, Toyota, Japan; ²Toyota Kosei Hospital, Orthopedic surgery, Toyota, Japan

Background: Romosozumab (ROMO), a monoclonal antibody that binds sclerostin, increases bone formation and decreases bone resorption. And although it is a novel therapeutic agent for osteoporosis, which has shown high effects of increasing bone density and inhibiting fragile fracture in overseas clinical trials. However the clinical efficacy for rheumatoid arthritis complicated with osteoporosis (RA-OP) is unknown.

Objectives: To evaluate the clinical efficacy of ROMO in patients with RA-OP for 12 months.

Methods: RA patients diagnosed according to the 2010 ACR/EULAR criteria. All patients met at least one of the following criteria were eligible; a bone mineral density T score of -2.5 or less at the lumbar spine or total hip and either one or more moderate or severe vertebral fractures or two or more mild vertebral fractures. All patients were initiated ROMO from between March and December, 2019. The total number of patients was 13 cases. The ROMO dose was 210mg at once every 1 months. In all cases native or activated vitamin D has been used. We reviewed the results for 12 months about the increase and decrease of bone mineral density (BMD) of lumbar spine (LS) and total hip (TH) by DEXA and bone turnover markers, intact n-terminal propeptide type I procollagen (PINP) and tartrate-resistant acid phosphatase form 5b (TRACP-5b).

Results: The gender was all female. The mean age was 73.2 ± 7.6; disease duration was 20.5 ± 16.9 years; the body mass index was 19.7 ± 3.0 and the FRAX was 40.5 ± 16.2. Clinical findings related to RA-OP at baseline were as follows; CRP 1.29 ± 1.66; DAS-CRP 3.43 ± 0.96; HAQ 1.59 ± 0.97 and, bone turnover markers and bone mineral density at baseline were as follows; PINP 58.1 ± 33.5; TRACP-5b 438 ± 216; LS-BMD and T-score 0.81 ± 0.15g/cm² and -2.63 ± 1.05 and TH-BMD 0.54 ± 0.08g/cm² and -3.22 ± 0.64g/cm². The rate of increased PINP from baseline to 1, 3, 6 and 12 months were each 114.3 ± 90.6% at 1 month, 131.6 ± 134.3% at 3 month, 122.6 ± 174.3% at 6 month and 80.4 ± 181.6% at 12 month and decreased TRACP-5b were -10.7 ± 20.8% at 1 month, 7.9 ± 36.9% at 3 month, 25.5 ± 64.6% at 6 month and 32.5

$\pm 77.0\%$ at 12 month. The rate of increased LS-BMD from baseline to 6 and 12 months were $8.6 \pm 8.0\%$, $12.5 \pm 11.1\%$ and TH-BMD were $4.3 \pm 5.0\%$, $6.8 \pm 6.9\%$ (Fig. 1, 2). **Conclusion:** Clinical efficacy of ROMO for RA-OP was extremely effective and has the high potential to be an important option in the treatment of RA-OP.

References:

Fig.1: The rate of increased LS-BMD from baseline to 12 month

Fig.2: The rate of increased TH-BMD from baseline to 12 month

Disclosure of Interests: None declared
DOI: 10.1136/annrheumdis-2021-eular.3462

OP0108 **LORECIVINT (SM04690), AN INTRA-ARTICULAR, SMALL-MOLECULE CLK2/DYRK1A INHIBITOR THAT MODULATES THE WNT PATHWAY, PROVIDED CARTILAGE-PROTECTIVE EFFECTS IN AN ANIMAL MODEL OF POST-TRAUMATIC OA**

T. Seo¹, V. Deshmukh¹, Y. Yazici². ¹Samumed, LLC, Biology, San Diego, United States of America; ²Samumed, LLC, Chief Medical Officer, San Diego, United States of America

Background: Osteoarthritis (OA) is characterized by increased cartilage thinning, bone remodeling, and inflammation. Post-traumatic OA, which develops after acute direct trauma to the joints, accounts for approximately 12% of all OA cases.¹ Current therapeutic options focus on alleviating symptoms and pain rather than disease modification. Lorecivint (LOR; SM04690), an intra-articular (IA), small-molecule CLK2/DYRK1A inhibitor that modulates the Wnt pathway, has been shown in animal studies to induce chondrogenesis, protect cartilage, and reduce inflammation and, thereby, improve joint health.²

Objectives: A single IA LOR injection was evaluated in a rat model of knee instability to determine its protective and regenerative effects when injected at different timepoints after induction of post-traumatic OA.

Methods: Knee instability/post-traumatic OA was surgically induced in rats by combining anterior cruciate ligament transection with partial medial meniscus transection (ACLT+pMMx). LOR (0.3 ug) or vehicle was injected into the IA space of the damaged knee at 2, 3, or 4 weeks after induction of OA. OA-induced (n=10/group) or sham-operated (surgery without ACLT+pMMx; n=5/group) rats were sacrificed at the injection timepoint (baseline) or 12 weeks following LOR/vehicle injection (study conclusion). Histological grades were evaluated using the summed OARSI scores (stage and grade of cartilage damage)³ of the anterior and posterior medial femoral condyle (MFC) and medial tibial plateau (MTP). Weight distribution analysis was performed using an incapacitance meter at several timepoints. Statistical analysis was performed using one-way ANOVA with Dunnett's multiple comparison test.

Results: ACLT+pMMx surgeries led to increased OARSI scores in rats compared with sham surgeries by 2 weeks. LOR treatment at Weeks 2, 3, and 4 led to significant decreases ($P < 0.05$) in total joint OARSI scores (Table 1) at the end of the study compared with vehicle treatment. Rats treated with LOR for 12 weeks and rats at injection baseline had similar OARSI scores, suggesting that LOR treatment arrested the progression of cartilage damage. Significant improvements ($P < 0.05$) were also observed in the weight distribution of LOR-treated rats in the 3- and 4-week groups at 6 and 12 weeks after their respective IA injections compared with vehicle-treated rats.

Table 1. OARSI scores

Week-2 injection	Sham-operated	Baseline (BL)	Vehicle	LOR
	(14 weeks after surgery)	(2 weeks after surgery)	(12 weeks after injection)	(12 weeks after injection)
Total score	5.99	19.17	31.36	19.19
SEM	1.07	1.55	2.48	1.81
P value versus BL				0.9999
P value versus vehicle				0.0004
Week-3 injection	Sham-operated	Baseline (BL)	Vehicle	LOR
	(15 weeks after surgery)	(3 weeks after surgery)	(12 weeks after injection)	(12 weeks after injection)
Total score	6.09	23.17	30.45	21.20
SEM	1.25	1.36	1.42	1.00
P value versus BL				0.4522
P value versus vehicle				0.0001
Week-4 injection	Sham-operated	Baseline (BL)	Vehicle	LOR
	(16 weeks after surgery)	(4 weeks after surgery)	(12 weeks after injection)	(12 weeks after injection)
Total score	6.97	16.88	24.95	18.63
SEM	1.32	1.04	1.74	1.61
P value versus BL				0.6257
P value versus vehicle				0.0111

Conclusion: LOR exhibited cartilage-protective effects and slowed disease progression in the ACLT+pMMx model in vivo and, therefore, has potential as a structure-modifying treatment for OA.

REFERENCES:

- [1] Brown TD, et al. *J Orthop Trauma*. 2006.
- [2] Deshmukh V, et al. *Osteoarthritis Cartil*. 2019.
- [3] Pritzker KPH, et al. *Osteoarthritis Cartil*. 2006.

Disclosure of Interests: Tim Seo Shareholder of: Samumed, LLC, Employee of: Samumed, LLC, Vishal Deshmukh Shareholder of: Samumed, LLC, Employee of: Samumed, LLC, Yusuf Yazici Shareholder of: Samumed, LLC, Employee of: Samumed, LLC

DOI: 10.1136/annrheumdis-2021-eular.2237

OP0109 **CARTILAGE LESIONS OF THE KNEE: GAGCEST IMAGING AT 3 T MRI AND INTRAOPERATIVE VALIDATION**

M. Pachowsky¹, S. Söllner², A. Kleyer³, G. Welsch⁴, G. Schett³. ¹University Hospital of Erlangen, Erlangen, Germany, Department of Internal Medicine 3 – Rheumatology and Immunology, Department of Trauma and Orthopaedic Surgery and Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany, Erlangen, Germany; ²University Hospital of Erlangen, Germany, Department of Trauma and Orthopaedic Surgery, Erlangen, Germany; ³University Hospital of Erlangen, Erlangen, Germany, Department of Internal Medicine 3 – Rheumatology and Immunology, and Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany, Erlangen, Germany; ⁴University Hospital Hamburg-Eppendorf, Hamburg, Germany, UKE Athleticum, Hamburg, Germany

Background: Morphological Magnetic Resonance Imaging (MRI) has become the accepted diagnostic tool for non-invasive evaluation of cartilage lesions¹. Emerging