

Indication	Medication	Administration	Invasive dental treatment	Summary	Specific
none	none	none	none		
osteoporosis	none	none	none		
				no AR + no dental extraction	
osteoporosis	bisphosphonate	oral	none		mixed Alendronate
				oral Alendronate + no Tx	Risedronate
				oral Risedronate + no Tx	Ibandronate
				oral Ibandronate + no Tx	Clodronate
				oral Clodronate + no Tx	
				oral BP + no Tx	
		IV/SC			mixed Zoledronate
				IV Zoledronate + no Tx	Ibandronate
				IV Ibandronate + no Tx	Pamidronate
				IV Pamidronate + no Tx	
				IV BP + no Tx	
	Denosumab	IV/SC			Denosuab + no Tx
					Romosuzumab + no Tx

Condition	Drug	Route	Outcome	Notes
none	none	none	YES	
osteoporosis	none	none	YES	No AR + dental extraction
osteoporosis	bisphosphonate	oral	YES	mixed Alendronate Risedronate Ibandronate oral BP + dental extraction oral BP + dental extraction - We Zoledronate IV BP(Zoledronate) + dental ex
	Denosumab	IV/SC		Denosumab + dental extraction
	Romosuzumab			Romosuzumab + dental extractic

Author	Year	MRONJ case (n)	Subject number (n)	Percentage (%)	PMID
Yamazaki	2017	0	74	0	28892457
Baillargeon	2011	10	6865	0.15	
McClung	2017	0	202	0	28361029
Lyles	2007	0	1057	0	17878149
Grbic	2025	1	3852	0.03	0
Kim	2010	55	164871	0.03	21037195
Papapoulos	2012	0	3383	0	22113951
		66	180304	0.04	
		66	180304	0.04	
Yamazaki	2017	1	92	1.09	28892457
Chiu	2014	38	6225	0.61	24758181
Eiken	2017	107	61990	0.17	28664276
Orwoll	2010	0	148	0	0
Kim	2010	31	40250	0.08	21037195
Mirelli	2022	9	168	5.36	35621542
Mahvar	2017	77	357	21.57	28361029
Saag	2022	1	2014	0.05	34787342
		264	111244	0.24	
Reid	2022	0	417	0	34787342
Kim	2010	20	38189	0.05	21037195
Mirelli	2022	17	46	36.96	35621542
Mahvar	2017	12	39	30.77	28361029
		49	38691	0.13	
Kim	2010	3	3983	0.08	21037195
		3	3983	0.08	
Mirelli	2022	1	95	1.05	35621542
		1	95	1.05	
		317	154013	0.21	
Baillargeon	2011	6	2296	0.26	
Mirelli	2022	26	76	34.21	35621542
Orwoll	2023	0	153	0	0
McClung	2017	0	379	0	28361029
Reid	2022	0	416	0	34787342
Lyles	2007	0	1054	0	17878149
Grbic	2025	1	3862	0.03	0
Kim	2010	0	274	0	21037195
		1	6138	0.02	
Kim	2010	2	4978	0.04	21037195
		2	4978	0.04	
Kim	2010	1	1776	0.06	21037195
		1	1776	0.06	
		36	15264	0.24	
		353	169277	0.21	
Papapoulos	2012	2	4549	0.04	22113951
		2	4549	0.04	
Saag	2022	1	2404	0.04	34787342
		1	2404	0.04	

		356	176230	0.2	
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Watts	2019	2	1731	0.12	30759221
Colella	2011	0	299	0	21954448
		2	2030	0.1	
		2	2030	0.1	

Fujimori	2025	30	1763	1.7	0
Kang	2020	0	406	0	32158685
Jeong	2025	8	161	4.97	0
Wei	2025	214	519	41.23	39611589
Jeong	2025	0	73	0	0
Jeong	2025	1	20	5	0

		253	2942	8.6	
i		39	2423	1.61	

Wei	2025	26	172	15.12	39611589
traction		26	172	15.12	
		65	2595	2.5	

Everts-Grabe	2017	3	420	0.71	28664276
Watts	2019	11	3591	0.31	30759221
Wei	2025	21	376	5.59	39611589
Colella	2011	10	427	2.34	21954448
		45	4814	0.93	

on					
		110	7409	1.48	

Study type	Full name
RCT	Romosozumab or Alendronate for Fracture Prevention in Women with
retrospective cohort	Risk factors of osteonecrosis of the jaw after tooth extraction in osteop
RCT	Zoledronic acid and clinical fractures and mortality after hip fracture
retrospective cohort	A multicenter retrospective study of the risk factors associated with me
RCT, multi-centered	The Incidence of Osteonecrosis of the Jaw in Patients Receiving 5 Mill
RCT	Five years of denosumab exposure in women with postmenopausal os

RCT	Romosozumab or Alendronate for Fracture Prevention in Women with
retrospective cohort	The Risk of Osteonecrosis of the Jaws in Taiwanese Osteoporotic Pati
retrospective cohort	Surgically treated osteonecrosis and osteomyelitis of the jaw and oral c
retrospective cohort	10-Year Institutional Retrospective Case-Control Study of Medication-F
RCT, multi-centered	The Incidence of Osteonecrosis of the Jaw in Patients Receiving 5 Mill
retrospective cohort	Medication-Related Osteonecrosis of the Jaw in Dental Practice: A Ret
retrospective cohort	Risk factors of osteonecrosis of the jaw after tooth extraction in osteop
retrospective cohort	Risk of Osteonecrosis of the Jaw Under Denosumab Compared to Bisph

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RCT	Five years of denosumab exposure in women with postmenopausal os
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retrospective cohort	Risk of Osteonecrosis of the Jaw Under Denosumab Compared to Bisph
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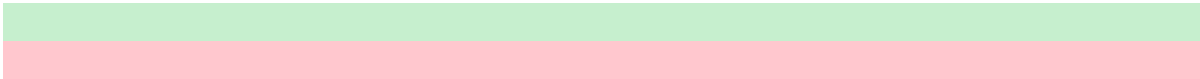
RCT Invasive Oral Procedures and Events in Postmenopausal Women With
retrospective cohort Osteonecrosis of the Jaw in Older Osteoporosis Patients Treated with

retrospective cohort A multicenter retrospective study of the risk factors associated with me
retrospective cohort The effect of bisphosphonate discontinuation on the incidence of post
retrospective cohort A multicenter retrospective study of the risk factors associated with me
retrospective cohort Risk Factors Influencing Medication-Related Osteonecrosis of the Jaw:
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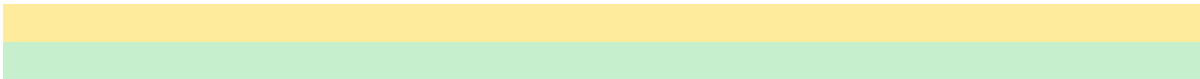
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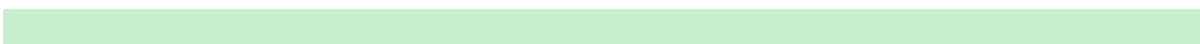
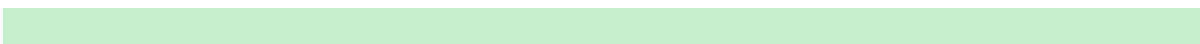
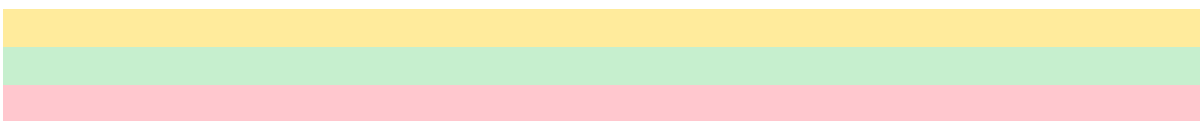
medication-related osteonecrosis of the jaw after tooth extraction in patients receiving oral bisphosphonates: a nationwide user-only cohort study



osteonecrosis of the jaw in patients highly adherent to alendronate treatment: a nationwide user-only cohort study



medication-related osteonecrosis of the jaw after tooth extraction in patients receiving oral bisphosphonates: a nationwide user-only cohort study



ication-related osteonecrosis of the jaw after tooth extraction in patients receiving oral bisphosphonates (MRONJ) Following Dental Extraction Among Osteoporotic Patients in Taiwan

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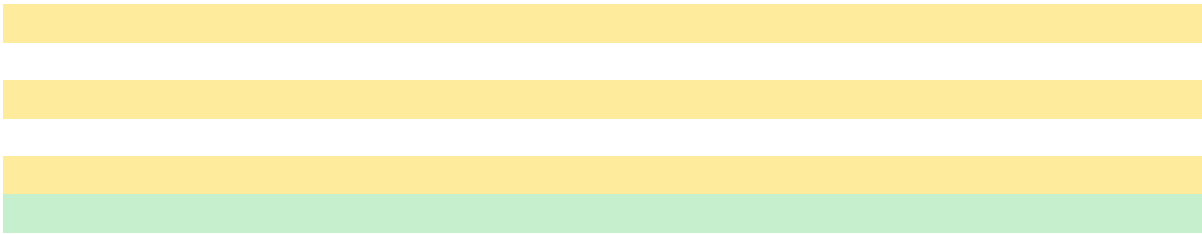
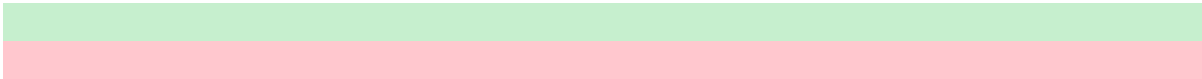
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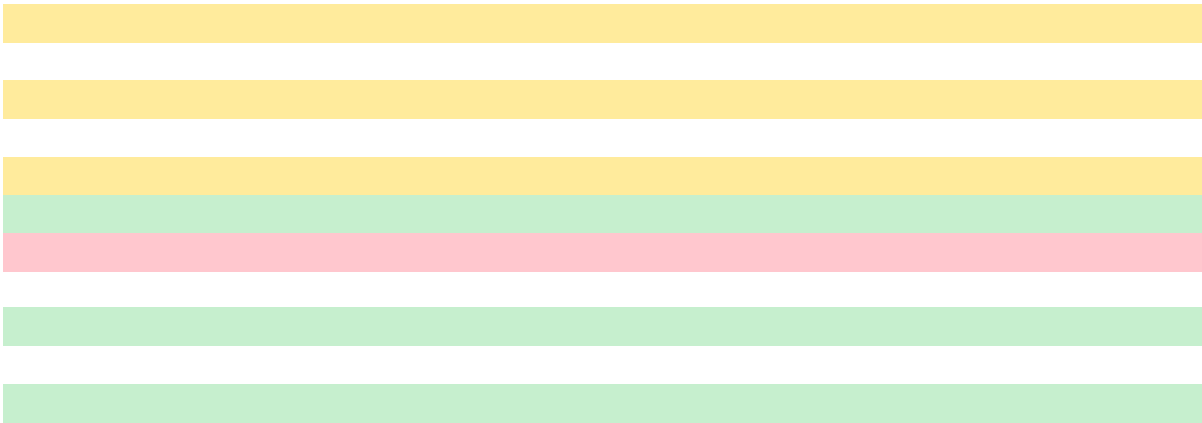
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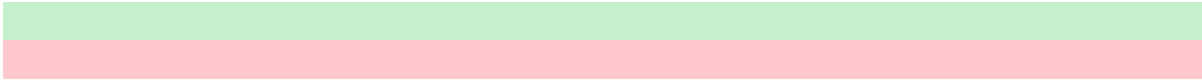
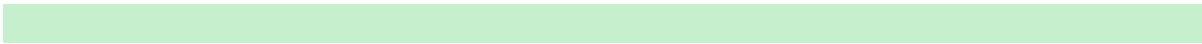
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osphonate therapy: can primary wound closure and a drug holiday really prevent MRONJ?



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