Supplementary Table 1 Clinical studies investigating VPT in permanent teeth (2010-2022)

Study	Authors,	Baseline	Teeth type and	VPT	РМ	Primary	Follow-up	Results
design	year and	sample	initial			outcome	period	
	country	size and	diagnosis					
		age						
RCT	Asgary and	407 teeth	Mature molars.	FP	CEM	Post-treatment	7 days	FP had better pain reducing
	Eghbal ⁶¹	9–65 years	IP			pain		effects than RCTx
	2010 Iran							
RCT	Asgary et al.63	407 teeth	Mature molars.	FP	CEM	Clinical and	1 year	FP (97.6%) and RCTx
	2013 Iran	9–65 years	IP			radiographic		(98.3%) had similar clinical
						success		success rates.
								Radiographic success was
								significantly better for FP
								(92.8%) than RCTx
								(81.2%)
Prosp.	Alqaderi et al. ⁶⁷	29 teeth	Mature premolars	FP	MTA	Clinical and	47 months	Overall success rate of FP
	2014 Kuwait	10–15 years	and molars.			radiographic		was 90%
			Deep caries, RP			success		
RCT	Asgary et al. ⁶²	407 teeth	Mature molars.	FP	CEM	Clinical and	2 years	FP and RCTx had similar
	2014 Iran	9–65 years	IP			radiographic		clinical and radiographic
						success;		success rates; Treatment
						Treatment		time/costs were
						time/cost		significantly better for FP
RCT	Asgary et al.42	407 teeth	Mature molars.	FP	CEM	Clinical and	5 years	No significant difference in
	2015 Iran	9–65 years	IP			radiographic		the five-year success rates
						success		of FP and RCTx
Retro.	Kunert et al. ⁵⁴	273 teeth	Not reported	FP	СН	Clinical and	1–29 years	FP success rates of 89% at
	2015 Brazil	8–79 years				radiographic		1 year and 63% at 10 years
						success		
RCT	Kumar et al.66	54 teeth	Mature lower	FP	MTA	Clinical and	1 year	FP with the three
	2016 India	14–32 years	molars.		СН	radiographic		medicaments had similar
			IP		PRF	success		clinical and radiographic
								success rates
Retro.	Linsuwanont	66 teeth	Young/mature	FP	MTA	Clinical and	62 months	Overall success rates of FP
	et al. ⁵⁵	7–68 years	molars.			radiographic		was 87.3%, including
	2017 Thailand		Carious			success		success rates of 84% and
			exposure, IP					76% for teeth with IP and
			and AP					AP, respectively
								. ,

Prosp.	Taha et al.41	52 teeth	Mature molars.	FP	MTA	Clinical and	3 years	Overall 92.7% success rate
	2017 Jordan	11–51	Carious			radiographic		for FP after 3 years
		years	exposure, IP			success		
			and AP					
Prosp.	Qudeimat et al.47	23 teeth	Young/mature	FP	MTA	Clinical and	19-74	100% clinical and
	2017 Kuwait	7–13 years	molars.			radiographic	months	radiographic success rates
			IP			success		
RCT	Asgary et al.69	412 teeth	Mature molars.	FP	MTA	Clinical and	5 years	5-year success rates of FP
	2017 Iran	9–65 years	IP and AP		CEM	radiographic		were similar for both MTA
						success		(85%) and CEM (78%)
RCT	Taha and	50 teeth	Mature molars.	PP	MTA	Clinical and	2 years	Success rates of MTA FP
	Khazali ³⁹	20–52	IP		СН	radiographic		(85%) were significantly
	2017 Jordan	years				success		better than CH FP (43%)
RCT	Galani <i>et al.</i> ⁶⁵	54 teeth	Mature 1 st & 2 nd	FP	MTA	Clinical and	18 months	Overall success rates were
	2017 India	15–50	lower molars.			radiographic		similar for FP (85%) and
		years	Carious			success; post-		RCTx (87.5%); Pain relief
			exposure			operative pain		significantly better for FP
Prosp.	Taha and	64 teeth	Mature molars.	FP	Biod	Clinical and	1 year	FP clinical and radiographic
	Abdelkader ⁴⁰	19–65	IP with or			radiographic		success rates were 100%
	2018 Jordan	years	without AP			success		and 98.4%, respectively
RCT	Asgary et al. ⁶⁴	302 teeth	Mature molars.	IPC	CEM	Clinical and	1 year	Comparable success rates
	2018 Iran	12–75	Deep caries,	DPC		radiographic	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	for all four VPT procedures
	2010 IIaii	years	RP, IP, AP	PP		success		Tor air rour vi i procedures
			Ν, π, Αι	FP		3000033		
DCT	Awawdeh et al.43	CO tooth	Mature incisors,		NATA	Clinical and	2 1/2000	Overall eveness rates were
RCT		68 teeth	,	DPC	MTA	Clinical and	3 years	Overall success rates were
	2018 Jordan	16–59 years	premolars,	PP	Biod	radiographic		similar for VPT procedures
			molars.			success		using MTA (96%) and Biod.
			Deep caries, RP					(91.7%)
RCT	Uesrichai et al.44	69 teeth	Young/mature	PP	MTA	Clinical and	14–50 months	Overall success rates were
	2019 Thailand	6–18 years	molars.		Biod	radiographic		similar for PP with MTA
			IP			success		(92%) and Biod. (87%)
Prosp.	Tan et al.	61 teeth	Mature teeth.	FP	MTA	Pulp survival	4 years	Overall pulp survival was
	202060	21–75 years	Carious			rates		90.2%
			exposure					
RCT	Eghbal <i>et al</i> . ⁶⁸	550 teeth	Mature molars.	FP	MTA	Post-operative	7 days	RCTx and FP with MTA or
	2020 Iran	10-61 years	Carious		CEM	pain relief		CEM had comparable post-
		yours	exposure, IP					operative pain relief
Prosp.	Guan et al. ⁵⁷	59 teeth	Young/mature	DPC	iRoot	Clinical and	6–36 months	Overall success rates of
	2021 China	6–20 years	pre-/molars.	PP		radiographic	HIOHUIS	the three VPT procedures
			Carious	FP		success		was 91.2%
			exposure, IP					
		İ		1	1			

2021							
J.	24–50	premolars,			and tooth		maintaining pulp vitality
Switzerland	years	molars,			survival		was 89.1%, with 98.4%
		incisors, and					tooth survival rates
		canines.					
		Carious					
		exposure					
Rechithra et al. ⁵⁸	80 teeth	Mature lower	FP	MTA	Clinical and	1 year	Overall success rate for
2021 India	16–35	molars.			radiographic		FP was 93.7%, and
	ycars	IP			success		carious lesion site did not
					depending		influence pulpotomy
Asgary et al.45	157 teeth	Mature molars.	FP	MTA	Clinical and	2 years	Clinical and radiographic
2021 Iran	10–60	Carious		CEM	radiographic		success rates were
	years	exposure, IP,			success		similar for MTA/CEM FP
		and AP					and RCTx (98-100%)
Koli et al. ⁴⁶	60 teeth	Mature lower	FP	MTA	Clinical and	1 year	Clinical success rates
2021 India	18–35	molars.			radiographic		were similar for MTA
	years	IP and AP			success		(93.3%) and RCTx (90%)
							with no differences in
Taha and Al- khatib ⁵⁹	109 teeth	Mature molars.	FP	MTA	Survival rate	4 years	Overall survival rate was
2022 Jordan	14–60	Carious					83.8%
	years	exposure, RP					
		and IP					
Taha et al. ⁷⁰	193 teeth	Mature molars.	FP	MTA	Clinical and	1 year	Overall success rates
2022 Jordan	10-70	IP and RP		Biod	radiographic		were similar for FP with
	years			TF	success		MTA (91.8%), Biod
							(93.3%), and TF (91.9%)
F	Rechithra et al. ⁵⁸ 2021 India Asgary et al. ⁴⁵ 2021 Iran Coli et al. ⁴⁶ 2021 India	Rechithra et al. 58 80 teeth 16-35 years 157 teeth 10-60 years 157 teeth 10-60 years 16-35	incisors, and canines. Carious exposure Rechithra et al. 58 80 teeth Mature lower molars. IP Asgary et al. 45 157 teeth Mature molars. Carious exposure, IP, and AP Coli et al. 46 60 teeth Mature lower molars. IP Coli et al. 46 60 teeth Mature lower molars. IP and AP Coli et al. 46 Carious exposure, IP, and AP Coli et al. 46 Carious exposure, IP, and AP Coli et al. 46 Carious exposure, IP, and AP Coli et al. 46 Carious exposure, IP, and IP Taha and Al- khatib 59 109 teeth Mature molars. Carious exposure, RP and IP Taha et al. 70 193 teeth Mature molars. Coli et al. 46 Carious exposure, RP and IP Taha et al. 70 193 teeth Mature molars. Coli et al. 46 Taha et al. 70 193 teeth Mature molars. Coli et al. 46 Taha et al. 70 incisors, and canines. Carious exposure Rechithra et al. ⁵⁸ 80 teeth Mature lower FP 1021 India 16–35 years IP 157 teeth Mature molars. IP Carious exposure, IP, and AP Coli et al. ⁴⁶ 60 teeth Mature lower FP 18–35 years IP molars. IP and AP Coli et al. ⁴⁶ 18–35 years IP and AP Carious exposure, IP, and AP Coli et al. ⁴⁶ Coli	incisors, and canines. Carious exposure Rechithra et al. 58 80 teeth Mature lower FP MTA 2021 India 16–35 years IP Response of the second	incisors, and canines. Carious exposure Rechithra et al. 69 80 teeth Mature lower FP MTA Clinical and radiographic success depending Regary et al. 45 157 teeth Mature molars. FP MTA Clinical and radiographic success depending Regary et al. 45 157 teeth Mature molars. FP MTA Clinical and radiographic success depending Regary et al. 45 157 teeth Mature molars. FP MTA Clinical and radiographic success Regary et al. 46 10–60 Carious exposure, IP, and AP Regard in the property of the pro	incisors, and canines. Carious exposure Rechithra et al. 58 80 teeth Mature lower FP MTA Clinical and 1 year radiographic success depending Resposure FP MTA Clinical and 1 year radiographic success depending Rechithra et al. 48 157 teeth Mature molars. IP MTA Clinical and 2 years Rechithra et al. 49 157 teeth Mature molars. IP MTA Clinical and 2 years Rechithra et al. 49 157 teeth Mature molars. IP MTA Clinical and radiographic success Rechithra et al. 49 157 teeth Mature molars. IP MTA Clinical and 1 year Rechithra et al. 49 157 teeth Mature molars. IP MTA Clinical and 1 year Rechithra et al. 40 193 teeth Mature molars. IP MTA Survival rate 4 years Rechithra et al. 40 193 teeth Mature molars. IP MTA Clinical and 1 year Rechithra et al. 40 193 teeth Mature molars. IP MTA Clinical and 1 year Rechithra et al. 40 193 teeth Mature molars. IP MTA Clinical and 1 year Rechithra et al. 40 193 teeth Mature molars. IP MTA Clinical and 1 year Rechithra et al. 40 193 teeth Mature molars. IP MTA Clinical and 1 year Rechithra et al. 40 193 teeth Mature molars. IP MTA Clinical and 1 year Rechithra et al. 40 193 teeth Mature molars. IP MTA Clinical and 1 year Rechithra et al. 40 193 teeth Mature molars. IP MTA Clinical and 1 year Rechithra et al. 40 193 teeth Mature molars. IP MTA Clinical and 1 year	

Key:
VPT = vital pulp therapy
PM = pulpotomy medicament
RCT = randomised controlled trial
Prosp = prospective
Retro = retrospective
IP = irreversible pulpitis
RP = reversible pulpitis
AP = apical periodontitis
RCTx = root canal treatment
FP = full pulpotomy
PP = partial pulpotomy
DPC = direct pulp capping
IPC = indirect pulp capping
CEM = calcium-enriched mixture
MTA = mineral trioxide aggregate
Biod: Biodentine
CH = calcium hydroxide
PRF = platelet rich fibrin
TF = TotalFill